SUPERO®

SUPERO® X7DVL-L

USER'S MANUAL

Revision 1.1

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Manual Revision 1.1

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Preface

About This Manual

This manual is written for system integrators, PC technicians and knowledgeable PC users. It provides information for the installation and use of the SUPERMICRO X7DVL-L motherboard. The SUPERMICRO X7DVL-L supports dual Intel Quad-Core and Dual-Core Xeon 5300/5100/5000 Series processors with a front side bus speed of 1.333 GHz/1.066 GHz/667 MHz (**Note**). With two 64-bit dual-core processors built in, the X7DVL-L offers superior performance, system reliability and power efficiency for embedded, storage, and communications platforms. The features supported by this motherboard include the Intel Core Microarchitecture, dual-core with dual-processing capabilities, ultra dense low-power platform, larger cache with 4 MB shared L2 capacity, the Intel Virtualization Technology, the Extended Memory 64 Technology (EM64), and the Intel I/O Acceleration Technology (Intel I/OAT). The X7DVL-L offers a superb solution for intense computing and complex I/O environments, and is ideal for high-end server systems. Please refer to the motherboard specifications pages on our web site (http://www.supermicro.com/products/motherboard/) for updates on supported processors. This product is intended to be professionally installed. (**Note**: CPUs with 90W or less are recommended.)

Manual Organization

Chapter 1 describes the features, specifications and performance of the mainboard and provides detailed information about the chipset.

Chapter 2 provides hardware installation instructions. Read this chapter when installing the processor, memory modules and other hardware components into the system. If you encounter any problems, see **Chapter 3**, which describes troubleshooting procedures for the video, the memory and the system setup stored in CMOS.

Chapter 4 includes an introduction to BIOS and provides detailed information on running the CMOS Setup utility.

Appendix A lists BIOS POST Error Codes.

Appendix B and Appendix C list Windows OS and Other Software Programs Installation Instructions.

Conventions Used in the Manual:

Special attention should be given to the following symbols for proper installation and to prevent damage done to the components or injury to yourself:

Danger/Caution: Instructions to be strictly followed to prevent catastrophic system failure or to avoid bodily injury.

Warning: Important information given to ensure proper system installation or to prevent damage to the components.

Note: Additional Information given to differentiate various models or to ensure correct system setup.

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Chapter 1

Introduction

1-1 Overview

Checklist

Congratulations on purchasing your computer motherboard from an acknowledged leader in the industry. Supermicro boards are designed with the utmost attention to detail to provide you with the highest standards in quality and performance. Check that the following items have all been included with your motherboard. If anything listed here is damaged or missing, contact your retailer.

All items are included in the retail box.

One (1) Supermicro Mainboard

One (1) ribbon cable for IDE devices (CBL-036L-03)

One (1) floppy ribbon cable (CBL-022L)

Four (4) SATA cables (CBL-0044L)

One (1) I/O backpanel shield (CSE-PT07L)

One (1) CPU Retention Module (SKT-0159L)

One (1) Supermicro CD containing drivers and utilities

One (1) User's/BIOS Manual

Contacting Supermicro

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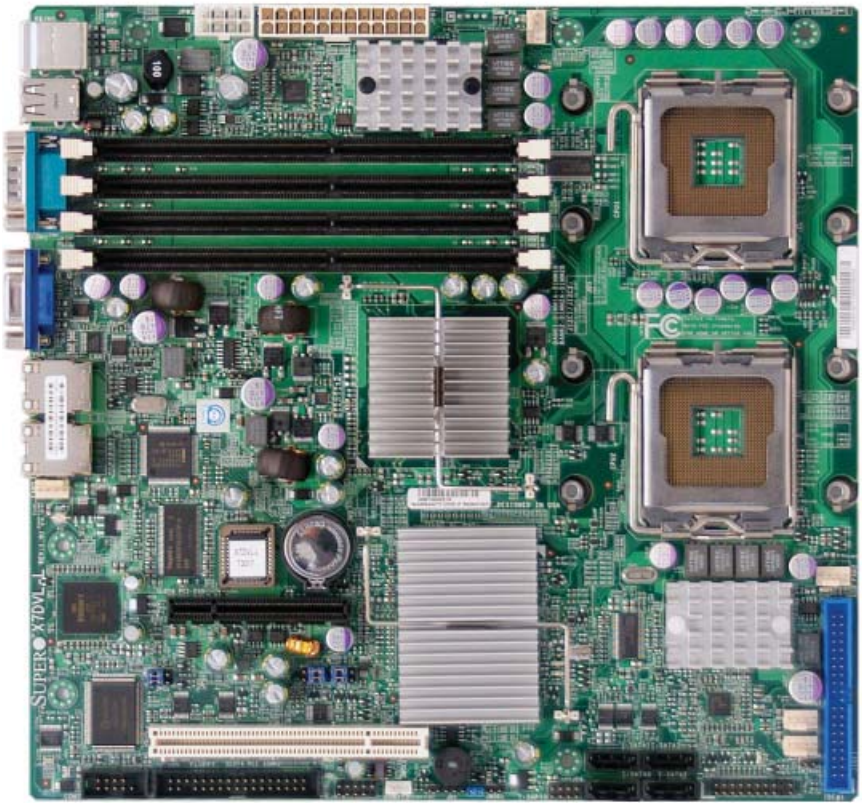
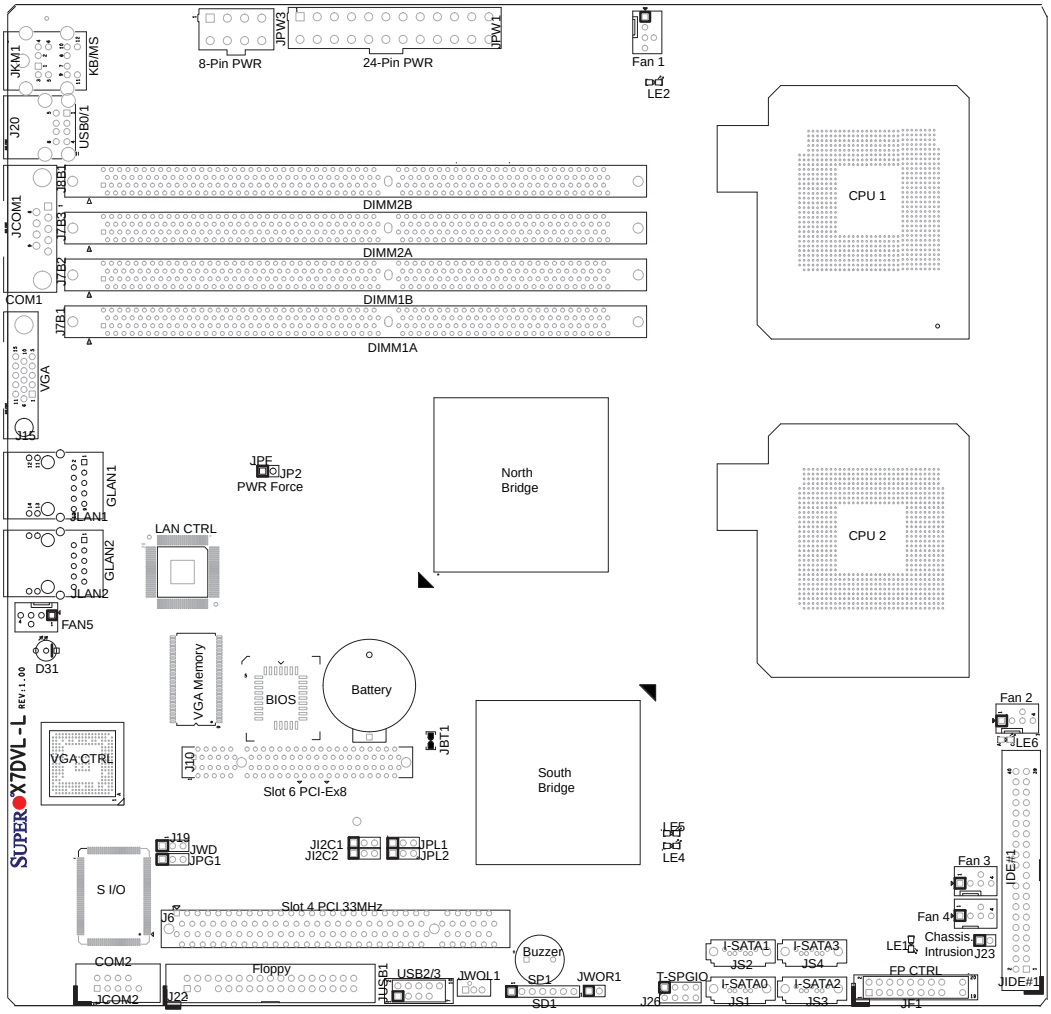
SUPER® X7DVL-L Image



Note: The drawings and graphics shown in this manual were based on the latest PCB Revision available at the time of publishing of the manual. The motherboard you've received may or may not look exactly the same as the graphics shown in the manual.

SUPER X7DVL-L Motherboard Layout

(not drawn to scale)



Notes:

1. Jumpers not indicated are for test purposes only.
2. See Chapter 2 for detailed information on jumpers, I/O ports and JF1 front panel connections.
3. "■" indicates the location of Pin 1.
4. When LE1 is on, make sure to unplug the power cable before removing or installing components.
5. CPUs with 90W or less are recommended.

Quick Reference (X7DVL-L)

Jumper	Description	Default Setting
JBT1	CMOS Clear	(See Pg. 2-23)
JI^{2}C1/JI^{2}C2	SMB to PCI Slot#1/Slot#2 Speed	Pins 2-3 (Disabled)
JPG1	VGA Enable	Pins 1-2 (Enabled)
JPL1/ JPL2	GLAN1/GLAN2 Enable	Pins 1-2 (Enabled)
JWD	Watch Dog	Pins 1-2 (Reset)

Connector	Description
ATX PWR (JPW1)	Primary 24-Pin ATX PWR Connector
CPU PWR (JPW3)	+12V 8-pin PWR
Chassis Intru.(J23)	Chassis Intrusion Header
COM1/COM2 (JCOM1/2)	COM1/COM2 Serial Port Connectors
DIMM#1A-DIMM#2B	Memory DDR2 Fully Buffered DIMM Slots
FAN 1-5	Fans 3-5: System cooling/chassis fans, Fans 1-2:CPU fans
Floppy (J22)	Floppy Disk Drive Connector
FP Control (JF1)	Front Control Panel Connector
GLAN 1/2 (JLAN1/2)	G-bit Ethernet Ports
IDE#1 (JIDE1)	IDE#1 Hard Drive
Keyboard/Mouse (JKM1)	Keyboard/Mouse Connectors
PWR LED/SPKR (JD1)	Power LED(pins1-3)/SpeakerHeader (pins 4-7)
PWR Force-On (JPF, JP2)	Power Force-On
SATA0-SATA3 (JS1-JS4)	Intel SATA 0-3 Connectors
Slot#4 (J6)	PCI 33MHz Slot
Slot#6 (J10)	PCI-Exp. x8 Slots
T-SGPIO (J26)	Serial General Purpose Input/Output Header
USB 0/1 (J20)	Back Panel USB 0/1
USB 2/3 (JUSB1)	Front Panel Accessible USB 2/3
VGA (J15)	VGA Port
WOL (JWOL1)	Wake-on-LAN Header
WOR (JWOR1)	Wake-on-Ring Header

LED Indicator	Description
D31	Status LED (See Pg. 2-26)
LE1	Power LED (See Note 4 on the previous page.)
LE2/LE6 (See Pg. 2-27)	CPU1 VRM Overheat(LE2)/CPU2 VRM Overheat (LE6)
LE4/LE5	POST-Code LED Indicators (See Pg. 2-26)

Note: Refer to Chapter 2 for more information on connectors and jumpers.

Motherboard Features

CPU

- Dual Intel® 64-bit LGA 771 Quad-Core/Dual-Core Xeon 5300/5100/5000 Series processors at a front side bus speed of 1.333 GHz/1.066 GHz/667 MHz (**Note**: CPUs with 90W or less are recommended.)

Memory

- Four 240-pin DIMM sockets with support up to 16 GB ECC FBD (Fully Buffered) DDR2 667/533 Memory (See Section 2-3 in Chapter 2 for DIMM Slot Population.)

Chipset

- Intel 5000V (Blackford-VS) chipset, including: the 5000V Memory Control Hub (MCH) and the Enterprise South Bridge 2 (ESB2)

Expansion Slots

- One PCI-E slot (one x8-Slot#6)
- One 32-bit PCI 33 MHz slot (Slot#4)

BIOS

- 8 Mb Phoenix® Flash ROM
- DMI 2.3, PCI 2.2, ACPI 1.0, Plug and Play (PnP), USB Keyboard support, Hardware BIOS Virus Protection and SMBIOS 2.3

PC Health Monitoring

- Onboard voltage monitors for CPU cores, +1.8V, +3.3V, +5V, +12V, –12V, +3.3V standby, +5V standby and VBAT
- Fan status monitor with firmware control
- CPU/chassis temperature monitors
- Low noise fan speed control
- Platform Environment Control Interface (PECI) ready
- CPU fan auto-off in sleep mode
- Pulse Width Modulation (PWM) fan control
- I^2C temperature sensing logic
- Thermal Monitor 2 (TM2) support
- CPU slow-down on temperature overheat
- CPU thermal trip support for processor protection
- Power-up mode control for recovery from AC power loss
- Chassis intrusion detection
- System resource alert via Supero Doctor III

ACPI Features

- Slow blinking LED for suspend state indicator
- Main switch override mechanism
- ACPI Power Management
- Power-on mode for power recovery

Onboard I/O

- Intel ESB2 supports four SATA ports (with RAID0, RAID1, RAID10 and RAID5 supported in the Window OS environment)
- The 82563EB supports two Giga-bit LAN ports
- One EIDE Ultra DMA/100 bus master interface
- One floppy port interface
- Two COM ports(1 header, 1 port)
- Up to four USB 2.0 (Universal Serial Bus) (2 ports, 1 Header)
- Xgi Z7 Graphic Controller
- Super I/O: Winbond W83627DHG

Other

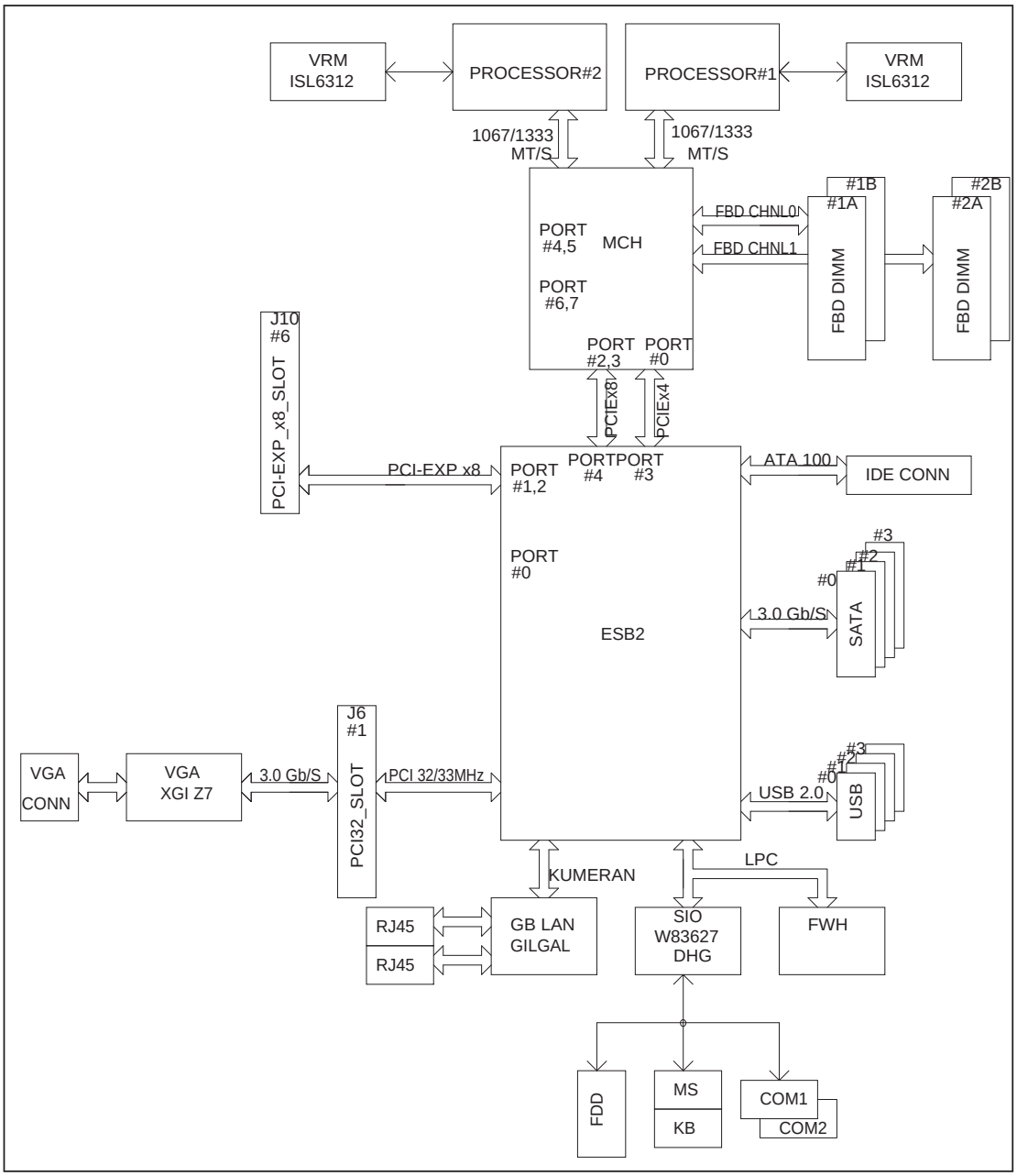
- External modem ring-on
- Wake-on-LAN (WOL)
- Wake-on-Ring (WOR)
- Console redirection
- Onboard Fan Speed Control by Thermal Management via BIOS

CD/Diskette Utilities

- BIOS flash upgrade utility and device drivers

Dimensions

- Proprietary 10" x 9.6" (254mm x 243.8mm)



Block Diagram of the 5000V Chipset

Note: This is a general block diagram. Please see the previous Motherboard Features pages for details on the features of each motherboard.

1-2 Chipset Overview

Built upon the functionality and the capability of the 5000V (Blackford-VS) chipset, the X7DVL-L motherboard provides the performance and feature set required for dual processor-based servers with configuration options optimized for communications, presentation, storage, computation or database applications. The 5000V (Blackford-VS) chipset supports a single or dual Intel® Quad-Core/Dual-Core Xeon 5300/5100/5000 Series processor(s) with front side bus speeds of up to 1.333 GHz. The chipset consists of the 5000V (Blackford-VS) Memory Controller Hub (MCH), and the Enterprise South Bridge 2 (ESB2). **(Note)**

The 5000V (Blackford-VS) MCH chipset is designed for symmetric multiprocessing across two independent front side bus interfaces. Each front side bus uses a 64-bit wide, 1333 MHz data bus that transfers data at 10.7 GB/sec. The MCH chipset connects up to four Fully Buffered DIMM modules, providing a total memory bandwidth of up to 16.0 GB/s. The MCH chipset also provides one x8 PCI-Express and one x4 ESI interfaces to the ESB2. In addition, the 5000V (Blackford-VS) chipset offers a wide range of RAS features, including memory interface ECC, x4/x8 Single Device Data Correction, CRC, parity protection, memory mirroring and memory sparing.

The Xeon Dual Core Processor Features

Designed to be used with conjunction of the 5000V chipset, the Xeon dual core Processor provides a feature set as follows:

The Xeon Dual Core Processors

- L1 Cache Size: Instruction Cache (32KB/16KB), Data Cache (32KB/24KB)
- L2 Cache Size: 4MB/2MB (per core)
- Data Bus Transfer Rate: 8.5 GB/s
- Package: FC-LGA6/FC-LGA4, 771 Lands
- **The Xeon Quad Core Processors**
- L1 Cache Size: Instruction Data Cache (32KB per core)
- L2 Cache Size: Shared 4MB per die (8MB Total Cache per processor)
- Data Bus Transfer Rate: 8.5 GB/s
- Package: FC-LGA6/FC-LGA4, 771 Lands

Note: CPUs with 90W or less are recommended.

1-3 Special Features

Recovery from AC Power Loss

BIOS provides a setting for you to determine how the system will respond when AC power is lost and then restored to the system. You can choose for the system to remain powered off (in which case you must hit the power switch to turn it back on) or for it to automatically return to a power- on state. See the Power Lost Control setting in the Advanced Setup section to change this setting. The default setting is **Last State**.

1-4 PC Health Monitoring

This section describes the PC health monitoring features of the X7DVL-L. All have an onboard System Hardware Monitor chip that supports PC health monitoring.

Onboard Voltage Monitoring

An onboard voltage monitor will scan the following voltages continuously: Onboard Voltage Monitors for the CPU Cores, Chipset Voltage, +1.8V, +3.3V, +5V, +12V, -12V, +3.3V Standby, +5V Standby and VBAT. Once a voltage becomes unstable, a warning is given or an error message is sent to the screen. Users can adjust the voltage thresholds to define the sensitivity of the voltage monitor.

Fan Status Monitor with Firmware Control

The PC health monitor can check the RPM status of the cooling fans. The onboard CPU and chassis fans are controlled by Thermal Management via BIOS (under Hardware Monitoring in the Advanced Setting).

Environmental Temperature Control

The thermal control sensor monitors the CPU temperature in real time and will turn on the thermal control fan whenever the CPU temperature reaches a user-defined threshold. The overheat circuitry runs independently from the CPU. Once it detects that the CPU temperature is too high, it will automatically turn on the thermal fan control to lower the CPU temperature. The onboard chassis thermal circuitry can monitor the overall system temperature and alert the user when the chassis temperature is too high.

System Resource Alert

This feature is available when used with Supero Doctor III in the Windows OS environment or used with Supero Doctor II in Linux. Supero Doctor is used to notify the user of certain system events. For example, if the system is running low on virtual memory and there is insufficient hard drive space for saving the data, you can be alerted of the potential problem. You can also configure Supero Doctor to provide you with warnings when the system temperature goes beyond a pre-defined range.

1-5 ACPI Features

ACPI stands for Advanced Configuration and Power Interface. The ACPI specification defines a flexible and abstract hardware interface that provides a standard way to integrate power management features throughout a PC system, including its hardware, operating system and application software. This enables the system to automatically turn on and off peripherals such as CD-ROMs, network cards, hard disk drives and printers.

In addition to enabling operating system-directed power management, ACPI provides a generic system event mechanism for Plug and Play and an operating system-independent interface for configuration control. ACPI leverages the Plug and Play BIOS data structures while providing a processor architecture-independent implementation that is compatible with Windows 2000, Windows XP and Windows 2003 Servers/Systems.

Slow Blinking LED for Suspend-State Indicator

When the CPU goes into a suspend state, the chassis power LED will start blinking to indicate that the CPU is in suspend mode. When the user presses any key, the CPU will wake-up and the LED will automatically stop blinking and remain on.

Main Switch Override Mechanism

When an ATX power supply is used, the power button can function as a system suspend button to make the system enter a SoftOff state. The monitor will be suspended and the hard drive will spin down. Pressing the power button again "wake-up" the whole system. During the SoftOff state, the ATX power supply provides power to keep the required circuitry in the system "alive." In case the system malfunctions and you want to turn off the power, just press and hold the power button for 4 seconds. This option can be set in the Power section of the BIOS Setup routine.

External Modem Ring-On

Wake-up events can be triggered by a device such as the external modem ringing when the system is in the Standby or Off state. Note that external modem ring-on can only be used with an ATX 2.01 (or above) compliant power supply.

Wake-On-LAN

Wake-On-LAN is defined as the ability of a management application to remotely power up a computer that is powered off. Remote PC setup, up-dates and asset tracking can occur after hours and on weekends so that daily LAN traffic is kept to a minimum and users are not interrupted. The motherboard has a 3-pin header (WOL) to connect to the 3-pin header on a Network Interface Card (NIC) that has WOL capability. In addition, an onboard LAN controller can also support WOL without any connection to the WOL header. The 3-pin WOL header is to be used with a LAN add-on card only.

Note: Wake-On-LAN requires an ATX 2.01 (or above) compliant power supply.

1-6 Power Supply

As with all computer products, a stable power source is necessary for proper and reliable operation. It is even more important for processors that have high CPU clock rates.

The X7DVL-L can only accommodate 24-pin ATX power supply. Although most power supplies generally meet the specifications required by the motherboard, some are inadequate. You should use one that will supply at least 400W of power. In addition, the 12V 8-pin is also required for adequate power supply to the CPU. Also your power supply must supply 1.5A for the Ethernet ports.

It is strongly recommended that you use a high quality power supply that meets ATX power supply Specification 2.02 or above. It must also be SSI compliant (For detailed information, please refer to the web site at http://www.ssiforum.org/). Additionally, in areas where noisy power transmission is present, you may choose to install a line filter to shield the computer from noise. It is recommended that you also install a power surge protector to help avoid problems caused by power surges.

1-7 Super I/O

The disk drive adapter functions of the Super I/O chip include a floppy disk drive controller that is compatible with industry standard 82077/765, a data separator, write pre-compensation circuitry, decode logic, data rate selection, a clock generator, drive interface control logic and interrupt and DMA logic. The wide range of functions integrated onto the Super I/O greatly reduces the number of components required

for interfacing with floppy disk drives. The Super I/O supports 360 K, 720 K, 1.2 M, 1.44 M or 2.88 M disk drives and data transfer rates of 250 Kb/s, 500 Kb/s or 1 Mb/s.It also provides two high-speed, 16550 compatible serial communication ports (UARTs). Each UART includes a 16-byte send/receive FIFO, a programmable baud rate generator, complete modem control capability and a processor interrupt system. Both UARTs provide legacy speed with baud rate of up to 115.2 Kbps as well as an advanced speed with baud rates of 250 K, 500 K, or 1 Mb/s, which support higher speed modems.

The Super I/O provides functions that comply with ACPI (Advanced Configuration and Power Interface), which includes support of legacy and ACPI power management through an SMI or SCI function pin. It also features auto power management to reduce power consumption.

Notes

Chapter 2

Installation

2-1 Static-Sensitive Devices

Electric-Static-Discharge (ESD) can damage electronic components. To prevent damage to your system board, it is important to handle it very carefully. The following measures are generally sufficient to protect your equipment from ESD.

Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing the board from the antistatic bag.
- Handle the board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.
- Use only the correct type of onboard CMOS battery as specified by the manufacturer. Do not install the onboard battery upside down to avoid possible explosion.

Unpacking

The motherboard is shipped in antistatic packaging to avoid static damage. When unpacking the board, make sure the person handling it is static protected.

2-2 Processor and Heatsink Installation

When handling the processor package, avoid placing direct pressure on the label area of the fan.

***Notes:** 1. Always connect the power cord last and remove it before adding, removing or changing any components. Make sure to install the processor into the CPU socket before you install the CPU heatsink.

2. Intel's boxed Xeon CPU package contains the CPU fan and heatsink assembly. If you buy a CPU separately, use only Intel-certified heatsink and fan.

3. Make sure to install the Heatsink Backplate and the motherboard into the chassis before you install the CPU heatsink and fan.(*See Installation Procedures below.)

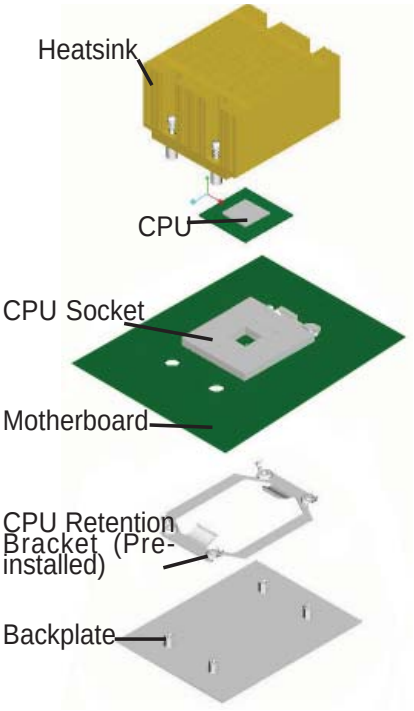
4. When purchasing a motherboard with an LGA 771 CPU Socket, make sure that the CPU plastic cap is in place and none of the CPU Socket pins are bent; otherwise, contact the retailer immediately.

5. All graphics shown in this manual are for reference only. The components that came with your motherboard may or may not look exactly the same as the pictures shown in this manual.

Installation Procedures

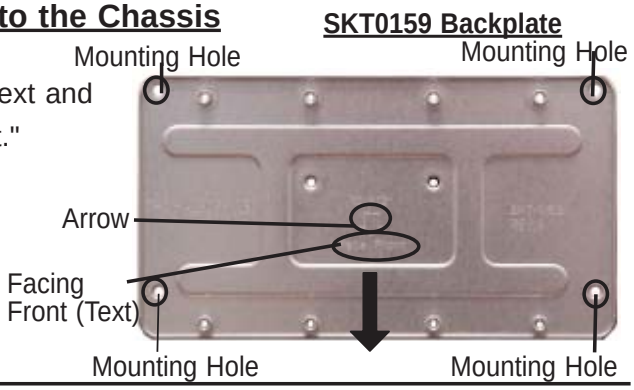
For proper system setup, please follow the procedure below to install the CPU, backplate, heatsink, and motherboard into the chassis.

1. Install the heatsink backplate onto the chassis.
2. Install the motherboard into the chassis.
3. Install the CPU onto the motherboard.
4. Install the heatsink or/and cooling fans (if any).
5. Connect fan and power cables (if any).



Mounting the Backplate onto the Chassis

1. On the backplate, locate the text and the arrow, indicating "facing front."



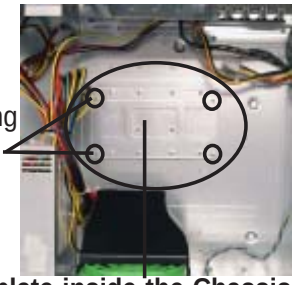
2. Locate the front side of the chassis.

3. Locate the four backplate mounting holes on the chassis.

4. Align the backplate with the chassis. Make sure that the arrow on the backplate is pointing at the front side of the chassis.

The Front Side of Chassis

5. Once the backplate is correctly oriented, align the four heatsink mounting holes on the backplate against their respective mounting holes on the chassis. (***Note**: The two mounting holes on the center of the backplate are optional.)



Backplate inside the Chassis (w/Mounting holes aligned)

6. Once aligned, securely attach the backplate onto the chassis by installing the screws into the mounting holes.

Mounting the Motherboard into the Chassis

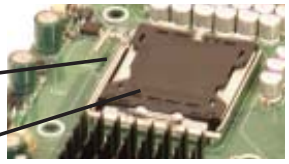
All motherboards have standard mounting holes to fit different types of chassis. Make sure that the locations of all the mounting holes for both motherboard and chassis match. Make sure that the metal standoffs click in or are screwed in tightly. Then, use a screwdriver to secure the motherboard onto the motherboard tray.

Mounting MB into the Chassis

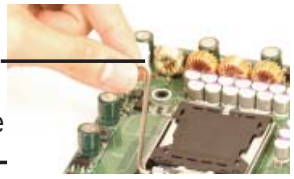
***Note**: some components are very close to the mounting holes. Please take precautionary measures to prevent any damage done to these components when you install the motherboard into the chassis.)

Installation of the LGA771 Processor

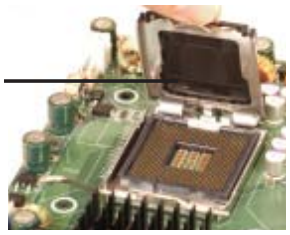
1. Press the load lever to release the load plate, which covers the CPU socket, from its locking position.



2. Gently lift the load lever to open the load plate.



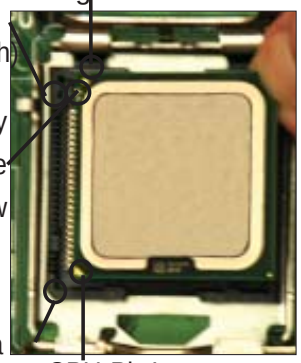
3. Use your thumb and index finger to hold the CPU at the North Center Edge and the South Center Edge of the CPU.



4. Align CPU Pin1 (the CPU corner marked with a triangle) against the socket corner that is marked with a triangle cutout.

5. Align the CPU key that is the semi-circle cutout below a gold dot against the socket key, the notch on the same side of the triangle cutout on the socket.

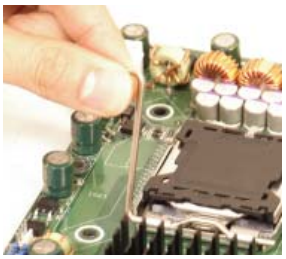
6. Once aligned, carefully lower the CPU straight down to the socket. (**Do not drop the CPU on the socket. Do not move the CPU horizontally or vertically. Do not rub the CPU against the surface or against any pins of the socket to avoid damage done to the CPU or the socket.)



7. With the CPU inside the socket, inspect the four corners of the CPU to make sure that the CPU is properly installed. Then, close the load plate.

8. Use your thumb to gently push the load lever down to lock it.

9. If the CPU is properly installed into the socket, the plastic cap will be automatically released from the load plate when the clip is pushed in the clip lock. Remove the plastic cap from the motherboard.



(**Warning**: Please save the plastic PnP cap. The motherboard must be shipped with the PnP cap properly installed to protect the CPU socket pins. Shipment without the PnP cap properly installed will cause damage to the socket pins.)

Installation and Removal of the Heatsink

CEK Heatsink Installation

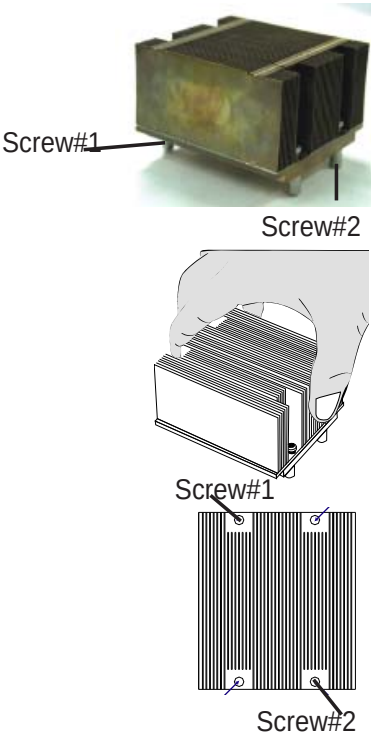
1. Do not apply any thermal grease to the heatsink or the CPU die; the required amount has already been applied.

2. Place the heatsink on top of the CPU so that the four mounting holes are aligned with those on the retention mechanism.

3. Screw in two diagonal screws (ie the #1 and the #2 screws) until just snug (-do not over-tighten the screws to avoid possible damage to the CPU.)

4. Finish the installation by fully tightening all four screws.

CEK Passive Heatsink



To Un-install the Heatsink

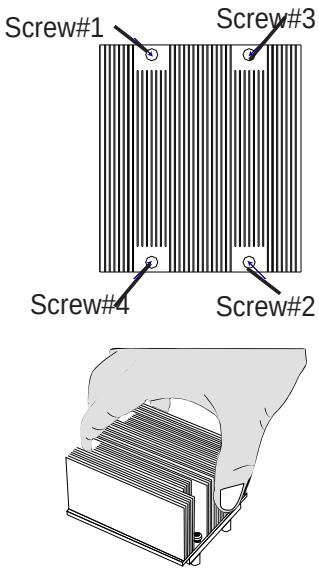
Warning: We do not recommend that the CPU or the heatsink be removed. However, if you do need to uninstall the heatsink, please follow the instructions on the next page to uninstall the heatsink to avoid damaging the CPU or the CPU socket.

1. Unscrew and remove the heatsink screws from the motherboard in the sequence as show in the picture on the right.

2. Hold the heatsink as shown in the picture on the right and gently wriggle the heatsink to loosen it from the CPU. (Do not use excessive force when wriggling the heatsink!!)

3. Once the heatsink is loosened, remove the heatsink from the CPU socket.

4. Clean the surface of the CPU and the heatsink to get rid of the old thermal grease. Reapply the proper amount of thermal grease on the surface before you re-install the CPU and the heatsink.



2-3 Installing DIMMs

Note: Check the Supermicro web site for recommended memory modules.

CAUTION

Exercise extreme care when installing or removing DIMM modules to prevent any possible damage. Also note that the memory is interleaved to improve performance (see step 1).

DIMM Installation

1. Insert the desired number of DIMMs into the memory slots, starting with DIMM #1A. (*See the Memory Installation Table Below.)
2. Insert each DIMM module vertically into its slot. Pay attention to the notch along the bottom of the module to prevent inserting the DIMM module incorrectly.
3. Gently press down on the DIMM module until it snaps into place in the slot. Repeat for all modules (see step 1 above).

Memory Support

The X7DVL-L supports up to 16 GB fully buffered (FBD) ECC DDR2 667/533 in 4 DIMMs. Populating DIMM modules with (a) pair(s) of memory modules of the same size and same type will result in better memory performance.

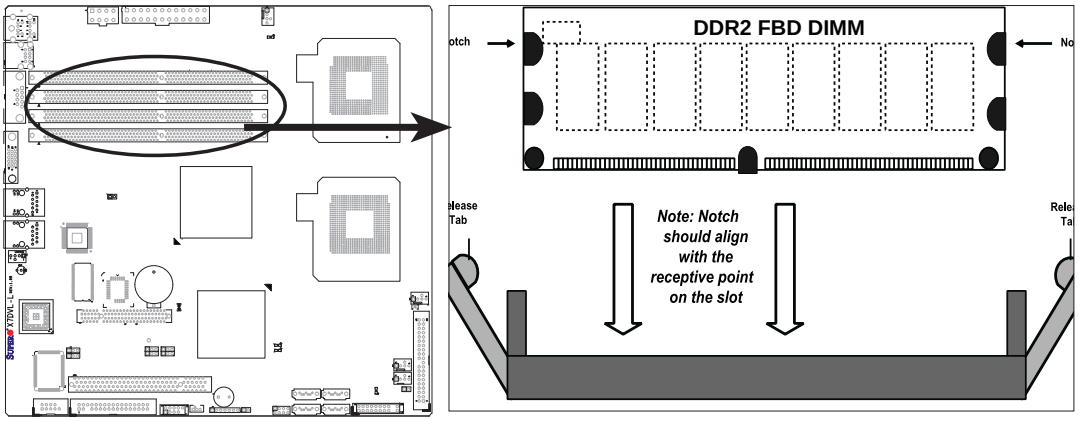
Note 1: Due to OS limitations, some operating systems may not show more than 4 GB of memory. (See the DIMM Population Configurations Table below.)

Optimized DIMM Population Configurations						
Number of DIMMs	**Bank 1**			**Bank 2**		
2 DIMMs	1A	------	------	2A	------	------
4 DIMMs	1A	1B	------	2A	2B	------
(***Notes:*** **i.** DIMM slot# specified: DIMM slot to be populated; "---": DIMM slot not to be populated. **ii.** Both FBD 533 MHz and 667MHz DIMMs are supported; however, you need to use the memory modules of the same speed and of the same type on a motherboard. **iii.** Interleaved memory is supported when pairs of DIMM modules are installed in **both Bank1 and Bank2**. **iv.** For memory to work properly, you need to follow the restrictions listed above.)						

Note 2: Due to memory allocation to system devices, memory remaining available for operational use will be reduced when 4 GB of RAM is used. The reduction in memory availability is disproportional. (Refer to the Memory Availability Table below for details.)

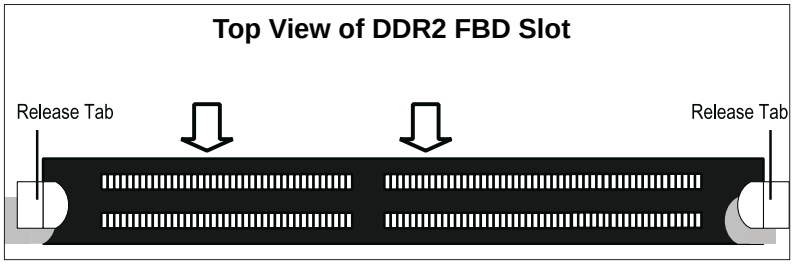
Possible System Memory Allocation & Availability		
System Device	Size	Physical Memory Remaining (-Available) (4 GB Total System Memory)
Firmware Hub flash memory (System BIOS)	1 MB	3.99
Local APIC	4 KB	3.99
Area Reserved for the chipset	2 MB	3.99
I/O APIC (4 Kbytes)	4 KB	3.99
PCI Enumeration Area 1	256 MB	3.76
PCI Express (256 MB)	256 MB	3.51
PCI Enumeration Area 2 (if needed) -Aligned on 256-MB boundary-	512 MB	3.01
VGA Memory	16 MB	2.85
TSEG	1 MB	2.84
Memory available to OS and other applications		2.84

Installing and Removing DIMMs



To Install: Insert module vertically and press down until it snaps into place. Pay attention to the alignment notch at the bottom.

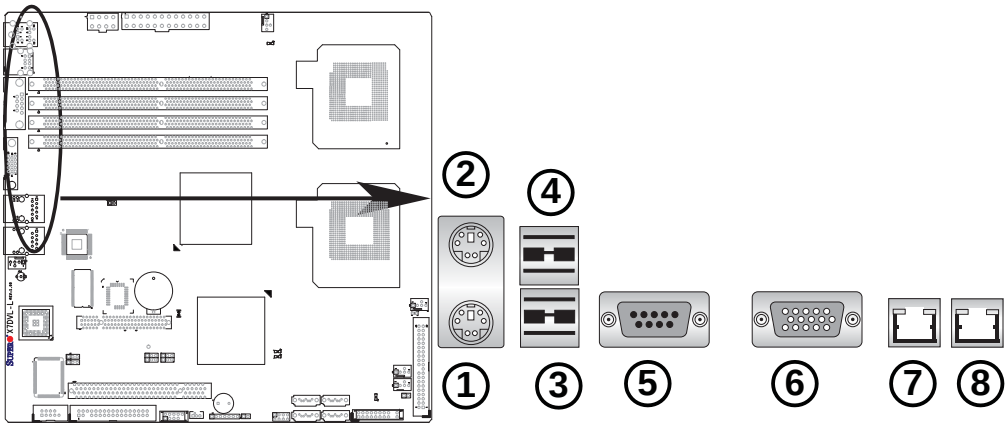
To Remove:
Use your thumbs to gently push the release tabs near both ends of the module. This should release it from the slot.



2-4 Control Panel Connectors/IO Ports

The I/O ports are color coded in conformance with the PC 99 specification. See Figure 2-3 below for the colors and locations of the various I/O ports.

A. Back Panel Connectors/IO Ports



Back Panel I/O Port Locations and Definitions

Back Panel Connectors

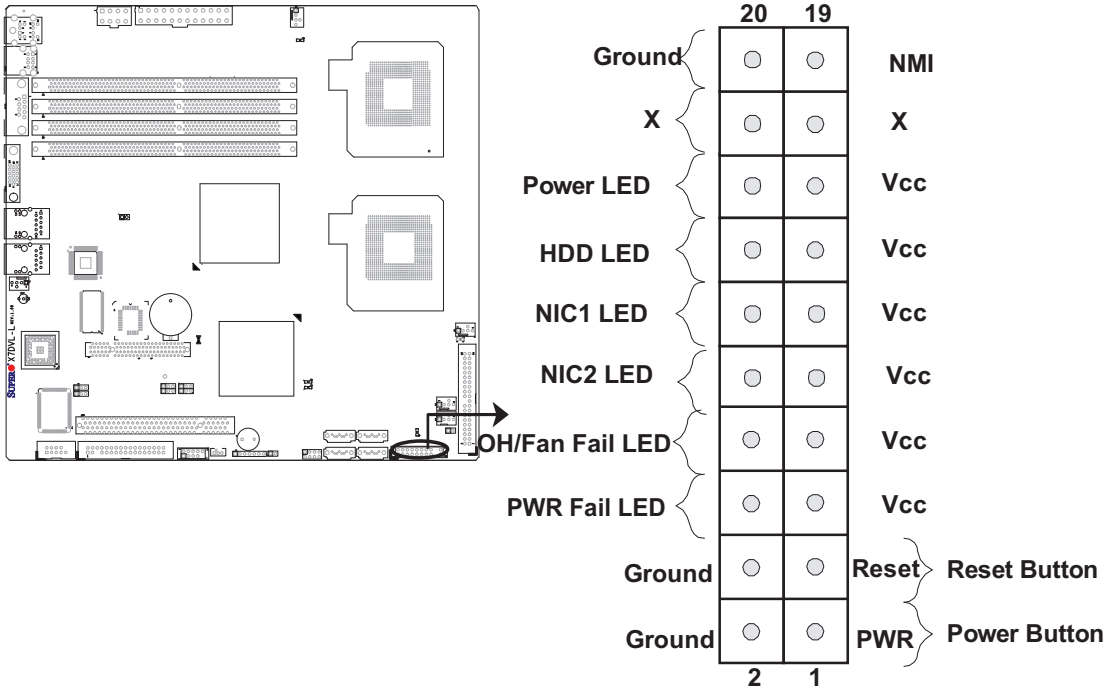
1. Keyboard (Purple)
2. PS/2 Mouse (Green)
3. Back Panel USB Port 0
4. Back Panel USB Port 1
5. COM Port 1 (Turquoise)
6. VGA Port (Blue)
7. Gigabit LAN 1
8. Gigabit LAN 2

(*See Section 2-5 for details.)

B. Front Control Panel

JF1 contains header pins for various buttons and indicators that are normally located on a control panel at the front of the chassis. These connectors are designed specifically for use with Supermicro server chassis. See Figure 2-4 for the descriptions of the various control panel buttons and LED indicators. Refer to the following section for descriptions and pin definitions.

JF1 Header Pins



C. Front Control Panel Pin Definitions

NMI Button

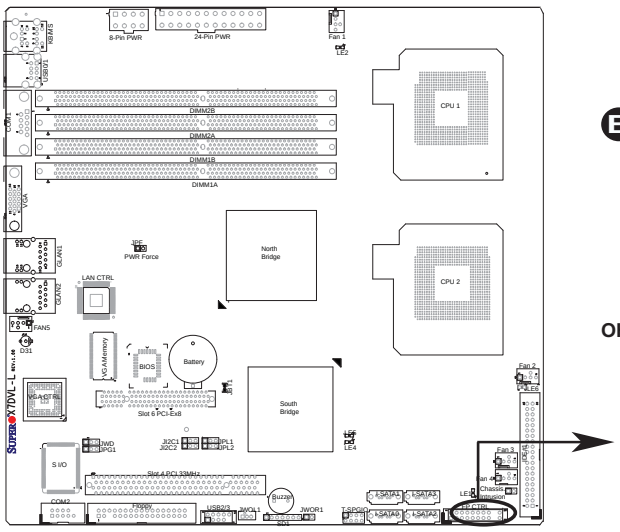
The non-maskable interrupt button header is located on pins 19 and 20 of JF1. Refer to the table on the right for pin definitions.

NMI Button Pin Definitions (JF1)	
Pin#	Definition
19	Control
20	Ground

Power LED

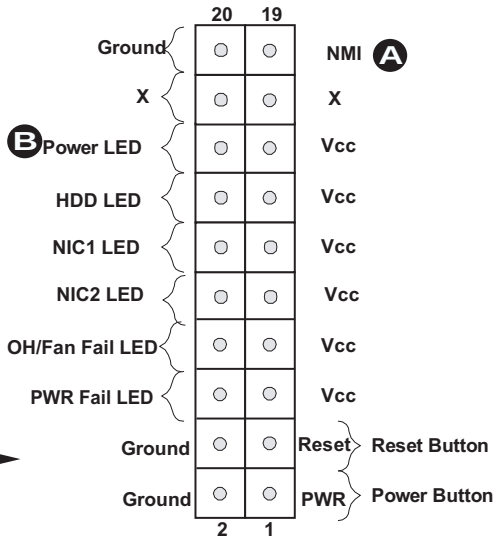
The Power LED connection is located on pins 15 and 16 of JF1. Refer to the table on the right for pin definitions.

Power LED Pin Definitions (JF1)	
Pin#	Definition
15	+5V
16	Ground



A. NMI

B. PWR LED



HDD LED

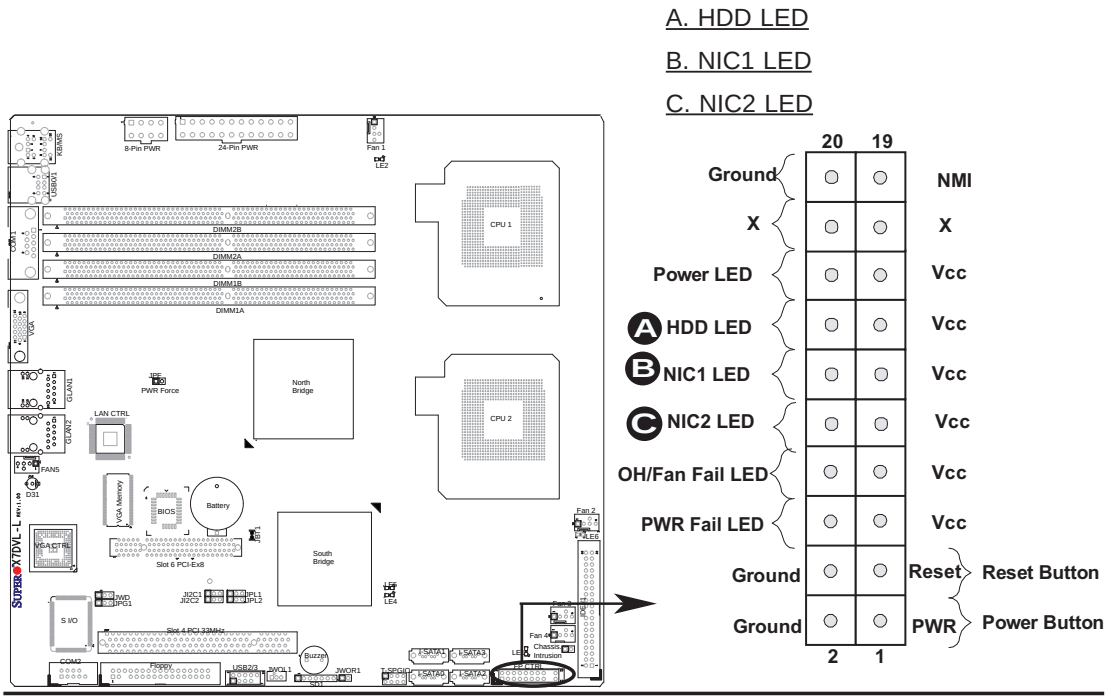
The HDD LED connection is located on pins 13 and 14 of JF1. Attach a hard drive LED cable here to display disk activities (for any hard drives on the system, including Serial ATA and IDE). See the table on the right for pin definitions.

HDD LED Pin Definitions (JF1)	
Pin#	Definition
13	+5V
14	HD Active

NIC1/NIC2 LED Indicators

The NIC (Network Interface Controller) LED connection for GLAN port1 is located on pins 11 and 12 of JF1 and the LED connection for GLAN Port2 is on Pins 9 and 10. Attach the NIC LED cables to display network activity. Refer to the table on the right for pin definitions.

GLAN1/2 LED Pin Definitions (JF1)	
Pin#	Definition
9/11	Vcc
10/12	Ground



Overheat/Fan Fail LED (OH)

Connect an LED to the OH/Fan Fail connection on pins 7 and 8 of JF1 to provide advanced warnings of chassis overheating or fan failure. Refer to the table on the right for pin definitions.

OH/Fan Fail LED Pin Definitions (JF1)	
Pin#	Definition
7	Vcc
8	Ground

OH/Fan Fail Indicator Status	
State	Definition
Off	Normal
On	Overheat
Flash-ing	Fan Fail

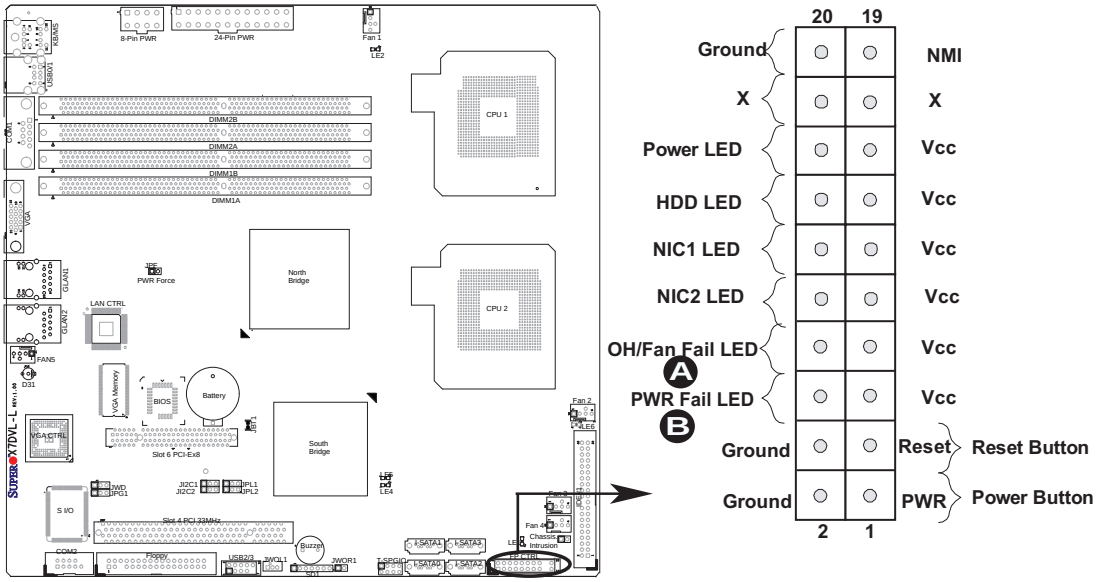
Power Fail LED

The Power Fail LED connection is located on pins 5 and 6 of JF1. Refer to the table on the right for pin definitions.

PWR Fail LED Pin Definitions (JF1)	
Pin#	Definition
5	Vcc
6	Ground

A. OH/Fan Fail LED

B. PWR Supply Fail



Reset Button

The Reset Button connection is located on pins 3 and 4 of JF1. Attach it to the hardware reset switch on the computer case. Refer to the table on the right for pin definitions.

Reset Button Pin Definitions (JF1)	
Pin#	Definition
3	Reset
4	Ground

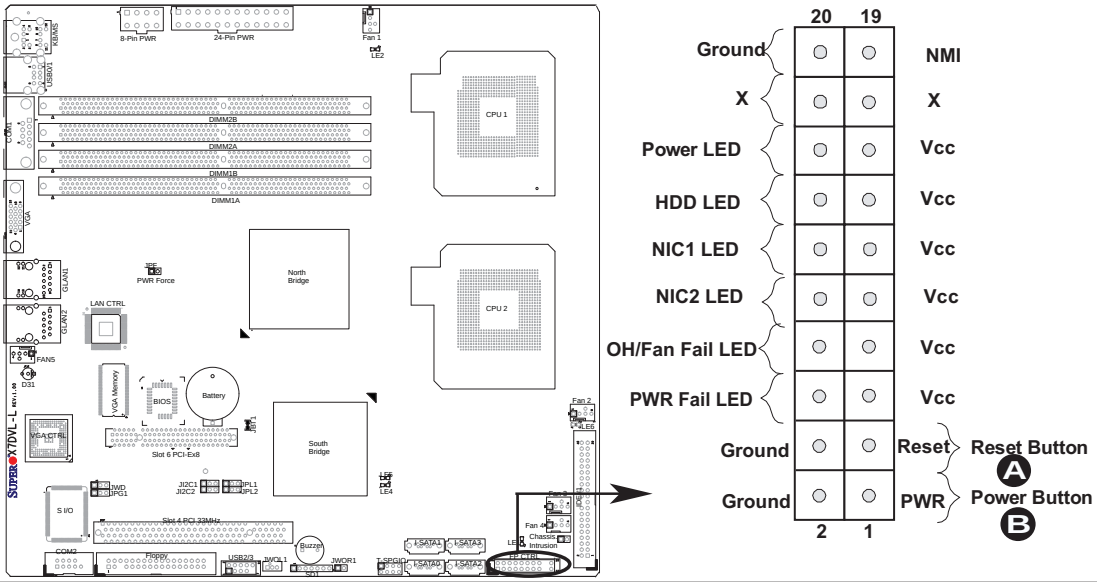
Power Button

The Power Button connection is located on pins 1 and 2 of JF1. Momentarily contacting both pins will power on/off the system. This button can also be configured to function as a suspend button (with a setting in the BIOS - see Chapter 4). To turn off the power when set to suspend mode, press the button for at least 4 seconds. Refer to the table on the right for pin definitions.

Power Button Pin Definitions (JF1)	
Pin#	Definition
1	Signal
2	+3V Standby

A. Reset Button

B. PWR Button



2-5 Connecting Cables

ATX Power Connector

There are a 24-pin main power supply connector(JPW1) and an 8-pin CPU PWR connector (JPW3) on the motherboard. These power connectors meet the SSI EPS 12V specification. See the table on the right for pin definitions. For the 8-pin PWR (JPW3), please refer to the item listed below.

ATX Power 20-pin Connector Pin Definitions

Pin#	Definition	Pin #	Definition
13	+3.3V	1	+3.3V
14	-12V	2	+3.3V
15	COM	3	COM
16	PS_ON	4	+5V
17	COM	5	COM
18	COM	6	+5V
19	COM	7	COM
20	Res (NC)	8	PWR_OK
21	+5V	9	5VSB
22	+5V	10	+12V
23	+5V	11	+12V
24	COM	12	+3.3V

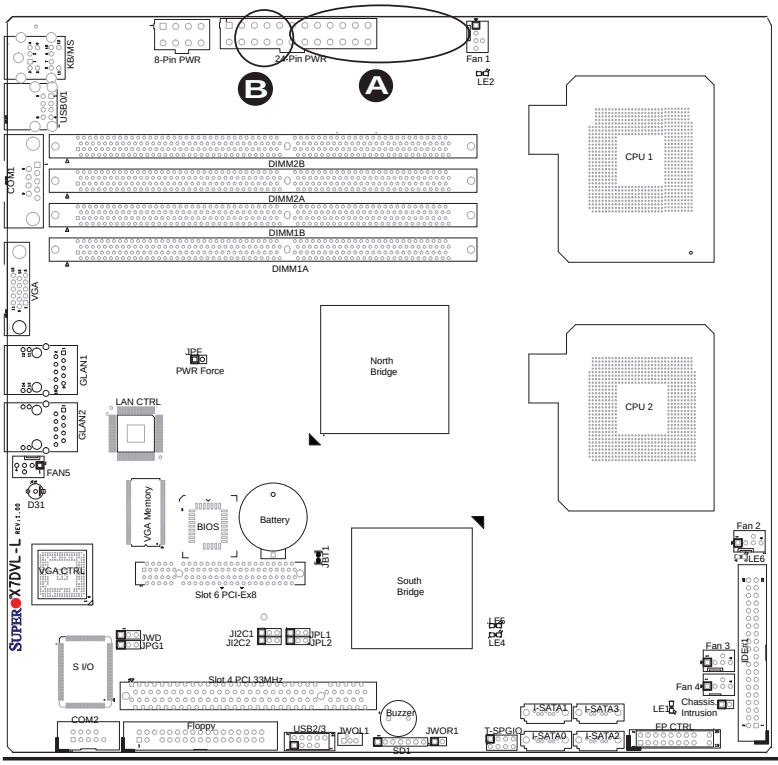
Processor Power Connector

In addition to the Primary ATX power connector (above), the 12V 8-pin CPU PWR connector at JPW3 must also be connected to your mother-board. See the table on the right for pin definitions.

12V 8-pin Power CPU Connector Pin Definitions

Pins	Definition
1 through 4	Ground
5 through 8	+12V

Required Connection



A. 24-pin ATX PWR

B. 8-pin Processor PWR

Universal Serial Bus (USB)

There are four USB 2.0 (Universal Serial Bus) ports/headers on the motherboard. USB Ports 0/1 (J20) are located on the I/O Back Panel, and USB Headers 2/3 (JUSB1) can be accessed from the Front Panel. See the tables on the right for pin definitions.

Back Panel USB (USB0/1)

Pin#	Definitions
1	+5V
2	PO-
3	PO+
4	Ground
5	N/A

Front Panel USB Pin Definitions

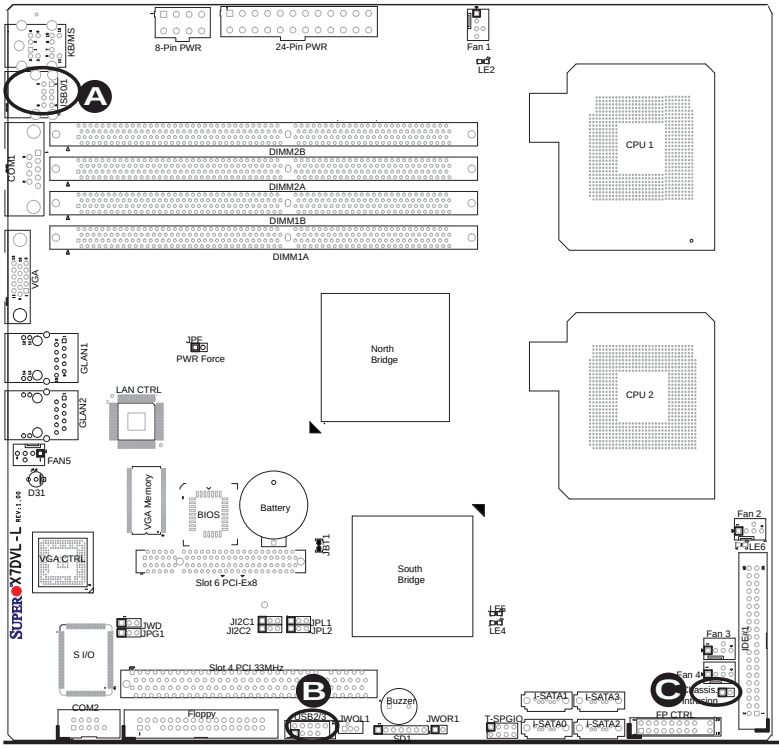
USB#2		USB#3	
Pin #	Definition	Pin #	Definition
1	+5V	1	+5V
2	PO-	2	PO-
3	PO+	3	PO+
4	Ground	4	Ground
5	Key	5	No connection

Chassis Intrusion

A Chassis Intrusion header (J23) is located next to the IDE port on the motherboard. Attach an appropriate cable from the chassis to inform you of a chassis intrusion when the chassis is opened.

Chassis Intrusion Pin Definitions

Pin#	Definition
1	Intrusion Input
2	Ground



A. Backpanel USB 0/1

B. Front Panel USB 2/3

C. Chassis Intrusion

Fan Headers

The X7DVL-L has three chassis/system fan headers (Fan3 to Fan5) and two CPU Fans (Fans 1/2). (***Note**: all these fans are 4-pin fans. However, Pins 1-3 of the fan headers are backward compatible with the traditional 3-pin fans.) See the table on the right for pin definitions. *The onboard fan speeds are controlled by the Thermal Management feature in Hardware Monitoring under the Advanced Section in the BIOS. ***Default**: Disabled. When using Thermal Management setting, please use all 3-pin fans or all 4-pin fans on the motherboard.)

Fan Header Pin Definitions (Fan1-6)

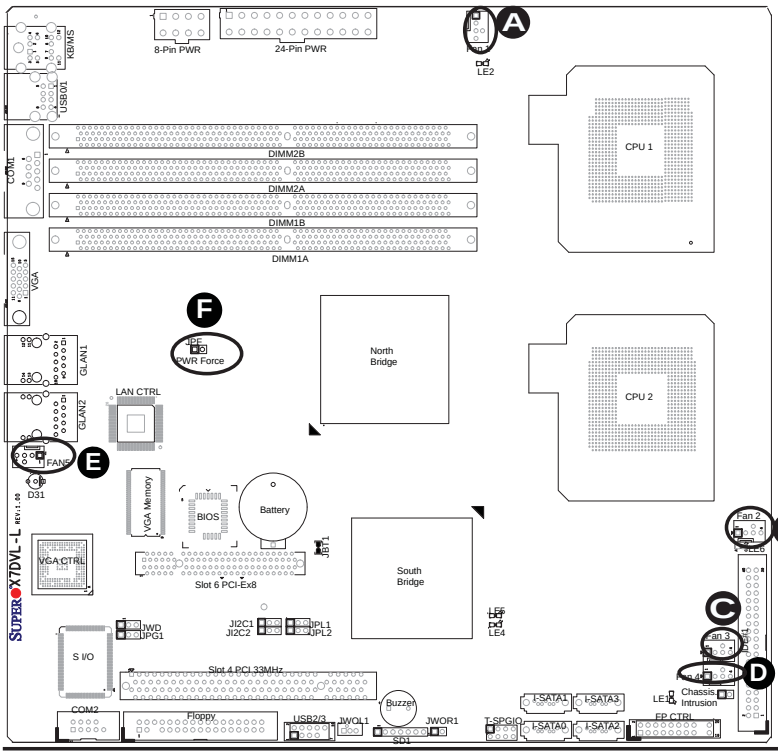
Pin#	Definition
1	Ground
2	+12V
3	Tachometer
4	PWR Modulation

Power Force On Enable/Disable

Jumper JPF allows you to enable or disable the Power Force-On function. If enabled, power supply to the system will always stay on automatically. If this function is disabled (the normal setting), the user needs to press the power button to power on the system.

Power Force On Enable/Disable Jumper Settings (JPF)

Jumper Setting	Definition
Open	Normal (*default)
Closed	Force On



A. Fan 1
B. Fan 2
C. Fan 3
D. Fan 4
E. Fan 5
F. Power Force-on

ATX PS/2 Keyboard and PS/2 Mouse Ports

The ATX PS/2 keyboard and the PS/2 mouse are located at JKM1. See the table on the right for pin definitions. (The mouse port is above the keyboard port. See the table on the right for pin definitions.)

PS/2 Keyboard and Mouse Port Pin Definitions

Pin#	Definition
1	Data
2	NC
3	Ground
4	VCC
5	Clock
6	NC

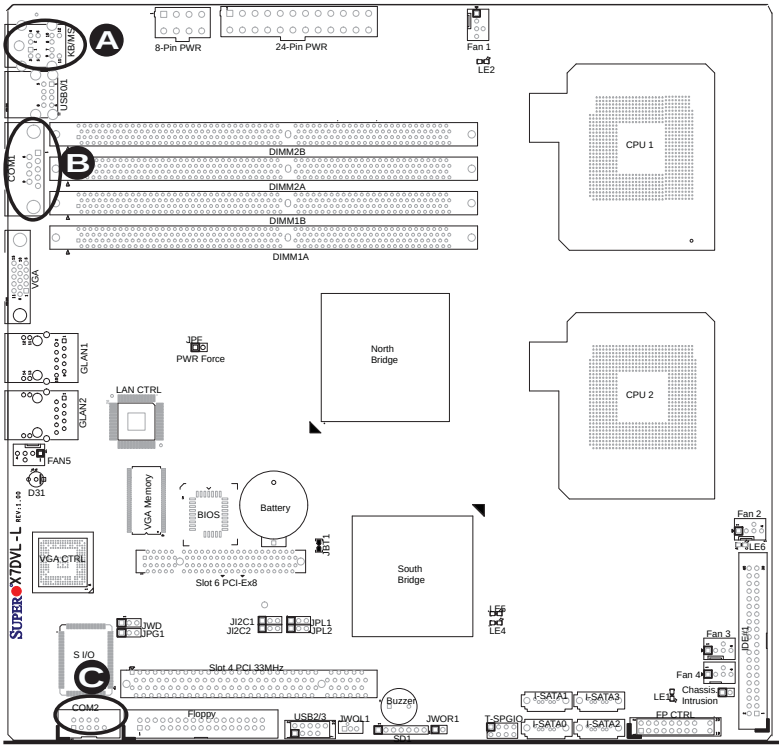
Serial Ports

COM1 is a connector located on the IO Backpanel and COM2 is a header located at JCOM2. See the table on the right for pin definitions.

Serial Port Pin Definitions (COM1/COM2)

Pin #	Definition	Pin #	Definition
1	CD	6	DSR
2	RD	7	RTS
3	TD	8	CTS
4	DTR	9	RI
5	Ground	10	NC

(Pin 10 is available on COM2 only. NC: No Connection.)



A. Keyboard/Mouse

B. COM1

C. COM2

Wake-On-Ring

The Wake-On-Ring header is designated JWOR1. This function allows your computer to be awakened by an incoming call to the modem when the system is in suspend state. See the table on the right for pin definitions. You must have a Wake-On-Ring card and cable to use this feature.

Wake-On-Ring Pin Definitions (JWOR1)

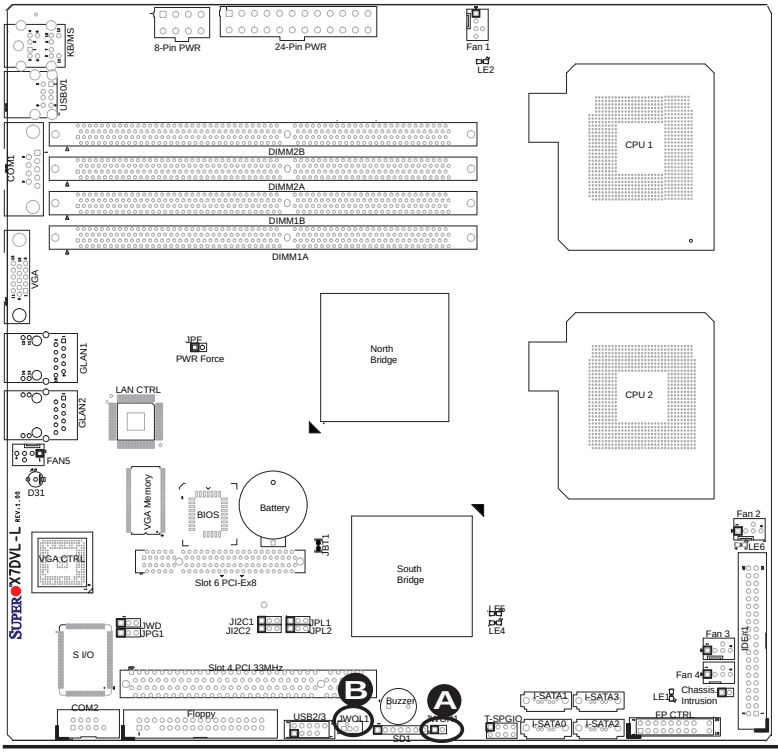
Pin#	Definition
1	Ground
2	Wake-up

Wake-On-LAN

The Wake-On-LAN header is located at JWOL1 on the motherboard. See the table on the right for pin definitions. (You must have a LAN card with a Wake-On-LAN connector and cable to use this feature.)

Wake-On-LAN Pin Definitions (JWOL1)

Pin#	Definition
1	+5V Standby
2	Ground
3	Wake-up



A. WOR

B. WOL

GLAN 1/2 (Giga-bit Ethernet Ports)

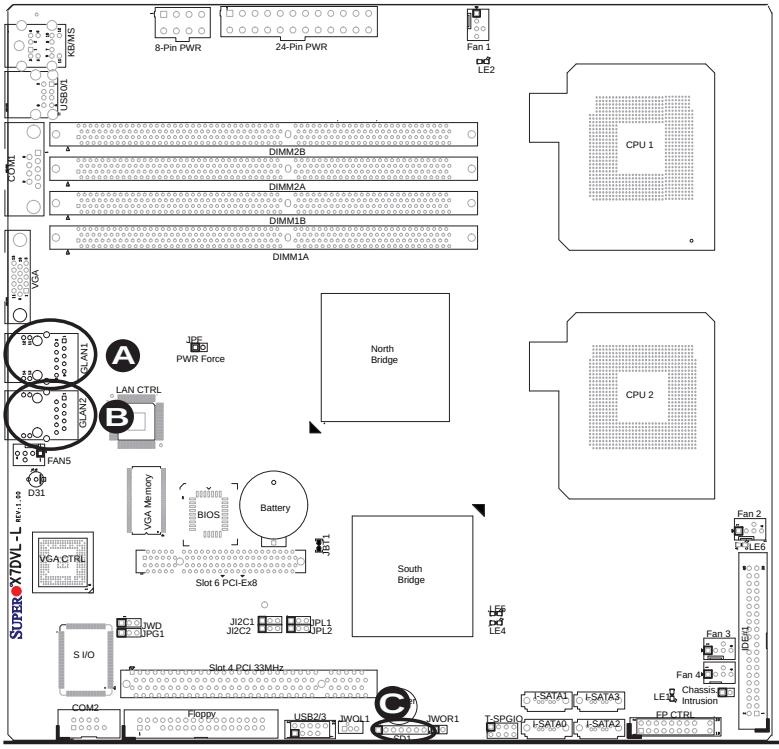
Two G-bit Ethernet ports: GLAN1 (JLAN1) and GLAN2 (JLAN2) are located on the I/O backplane. These ports accept RJ45 type cables.

GLAN1 GLAN2

Power LED/Speaker

On the JD1 header, pins 1-3 are for a power LED and pins 4-7 are for the speaker. Close pins 4-7 with a jumper to use an external speaker. If you wish to use the onboard speaker, please close pins 6-7. See the table on the right for speaker pin definitions.

Speaker Connector	
Pin Setting	Definition
Pins 6-7	Internal Speaker
Pins 4-7	External Speaker



A. GLAN1

B. GLAN2

C. PWR LED/Speaker

T-SGPIO Header

The T-SGPIO (Serial General Purpose Input/Output) header is located at J26 on the motherboard. This header is used to "talk to" a system-monitoring chip on the backplane. See the table on the right for pin definitions. Refer to the board layout below for the location of the header.

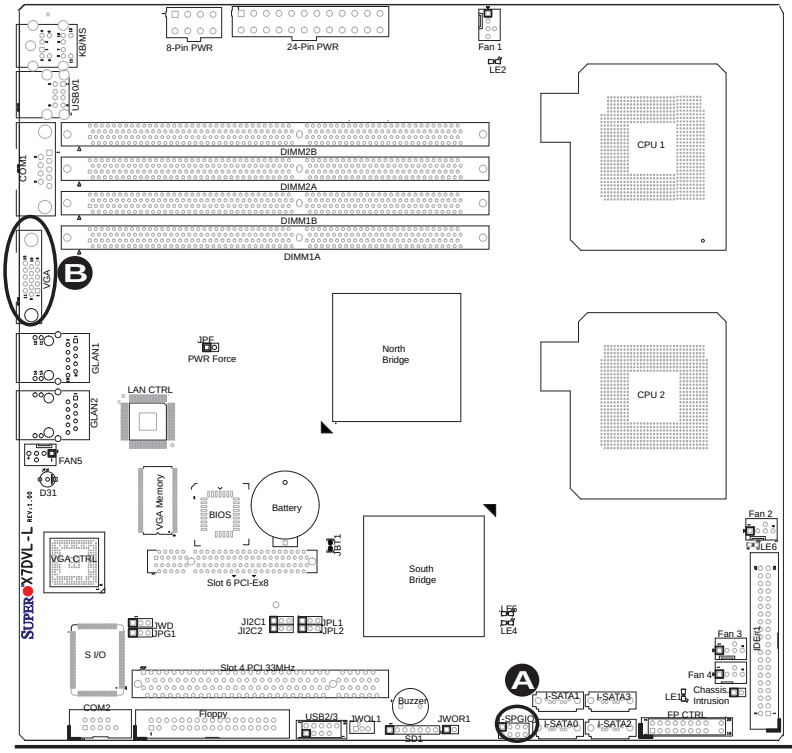
T-SGPIO
Pin Definitions

Pin#	Definition	Pin	Definition
1	*NC	2	*NC
3	Ground	4	DATA Out
5	Load	6	Ground
7	Clock	8	*NC

***Note:** NC= No Connections

VGA Connector

A VGA connector (J15) is located next to the COM1 port on the IO backplane. Refer to the board layout below for the location.



A. T-SGPIO

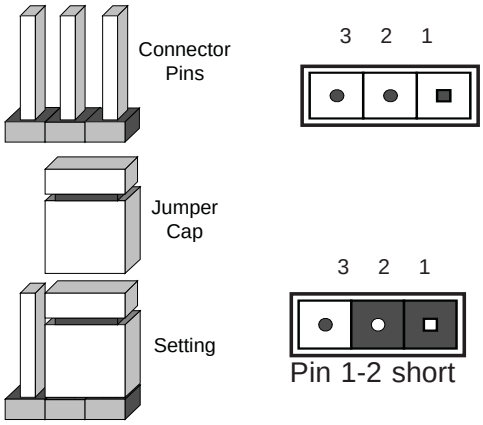
B. VGA

2-6 Jumper Settings

Explanation of Jumpers

To modify the operation of the motherboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. See the motherboard layout pages for jumper locations.

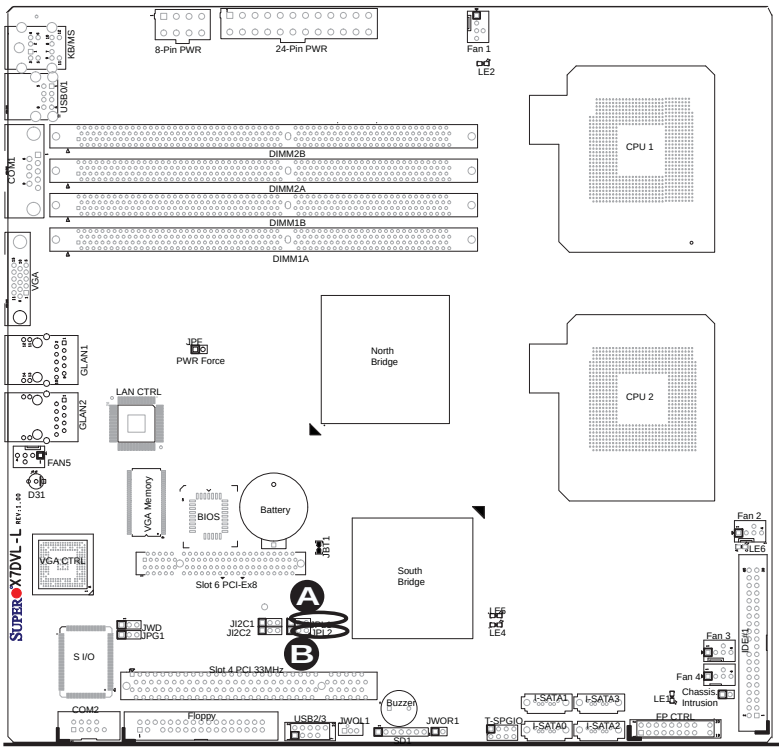
Note: On two pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins.



GLAN Enable/Disable

JPL1/JPL2 enable or disable the GLAN Port1/GLAN Port2 on the motherboard. See the table on the right for jumper settings. The default setting is enabled.

GLAN Enable	
Pin#	Definition
1-2	Enabled (*default)
2-3	Disabled



A. GLAN Port1 Enable

B. GLAN Port2 Enable

CMOS Clear

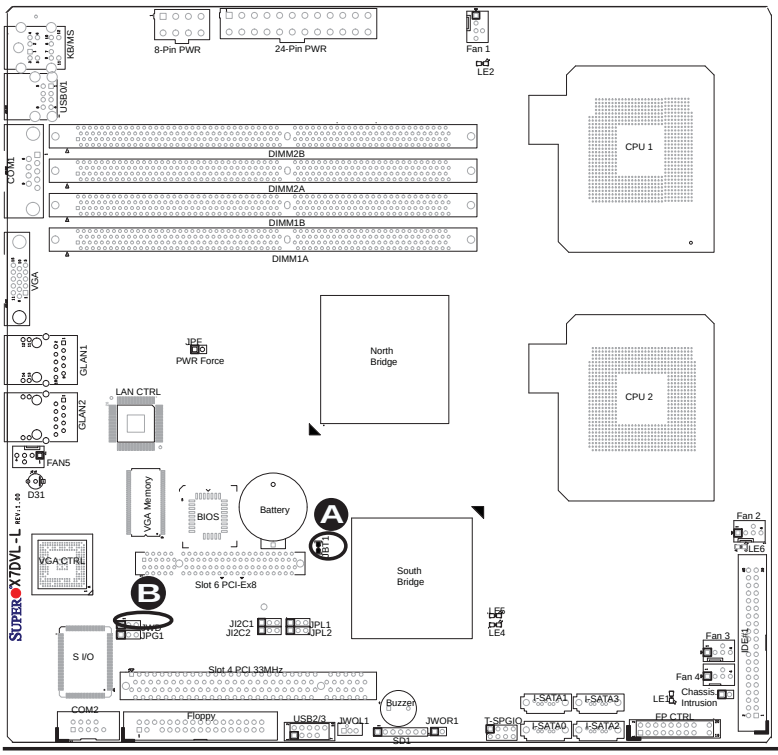
JBT1 is used to clear CMOS. Instead of pins, this "jumper" consists of contact pads to prevent the accidental clearing of CMOS. To clear CMOS, use a metal object such as a small screwdriver to touch both pads at the same time to short the connection. Always remove the AC power cord from the system before clearing CMOS.

Note: For an ATX power supply, you must completely shut down the system, remove the AC power cord and then short JBT1 to clear CMOS.

Watch Dog Enable/Disable

Watch Dog (JWD) is a system monitor that can reboot the system when a software application hangs. Close pins 1-2 to reset the system if an application hangs. Close pins 2-3 to generate a non-maskable interrupt signal for the application that hangs. See the table on the right for jumper settings. Watch Dog must also be enabled in the BIOS.

Watch Dog Jumper Settings (JWD)	
Jumper Setting	Definition
Pins 1-2	Reset (*default)
Pins 2-3	NMI
Open	Disabled



A. Clear CMOS

B. Watch Dog Enable

VGA Enable/Disable

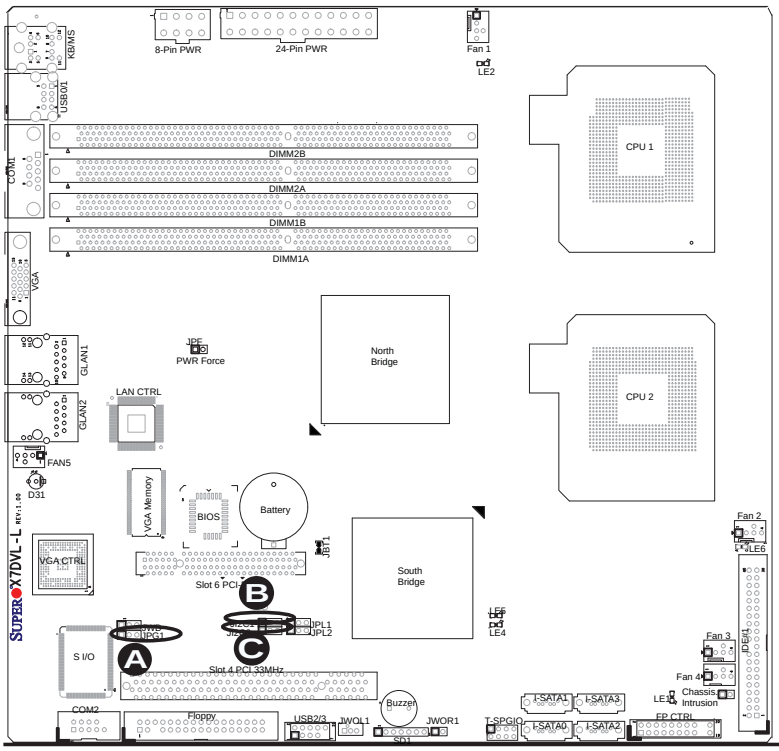
JPG1 allows you to enable or disable the VGA port. The default position is on pins 1 and 2 to enable VGA. See the table on the right for jumper settings.

VGA Enable/Disable Jumper Settings	
Both Jumpers	Definition
Pins 1-2	Enabled (*Default)
Pins 2-3	Disabled

I²C Bus to PCI Slots

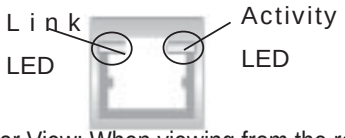
Jumpers JI²C1/JI²C2 allow you to connect the System Management Bus (I²C) to PCI slots. The default setting is Open to disable the connection. See the table on the right for jumper settings.

I²C to PCI-Slots Jumper Settings	
Jumper Setting	Definition
Closed	Enabled
Open	Disabled (*Default)



A. VGA Enabled
B. JI²C1
C. JI²C2

2-7 Onboard Indicators



(Rear View: When viewing from the rear side of the chassis.)

GLAN LEDs

There are two GLAN ports on the motherboard. Each Gigabit Ethernet LAN port has two LEDs. The yellow LED indicates activity, while the other LED may be green, amber or off to indicate the speed of the connection. See the tables at right for more information.

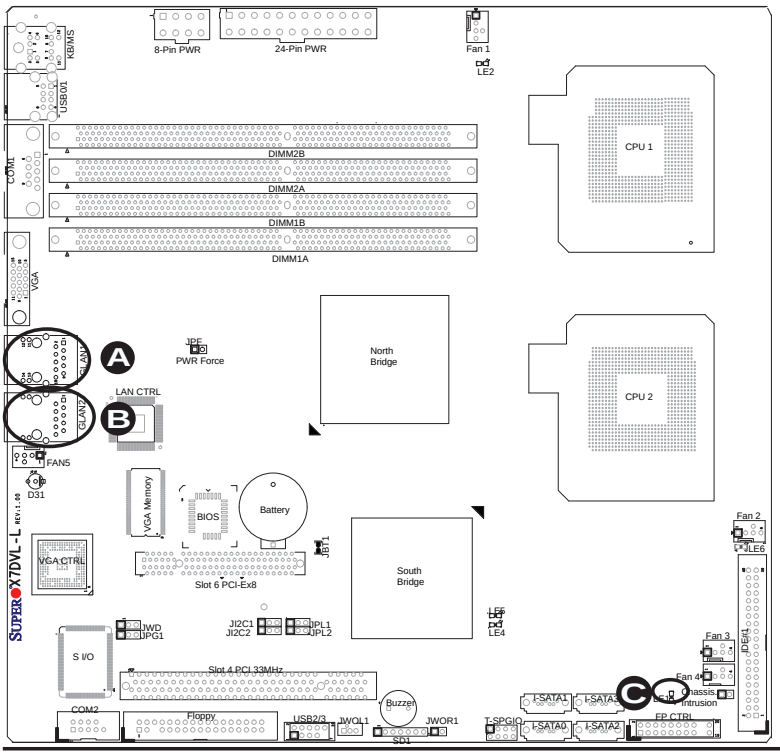
GLAN Activity Indicator		
Color	Status	Definition
Yellow	Flashing	Active

GLAN Link Indicator	
LED Color	Definition
Off	No Connection or 10 Mbps
Green	100 Mbps
Amber	1 Gbps

Onboard Power LED (LE1)

An Onboard Power LED is located at LE1 on the motherboard. When this LED Indicator is on, the system is on. Be sure to unplug the power cable before removing or adding any components. See the table on the right for more details.

Onboard PWR LED Indicator (LE1)	
LED Color	Definition
Off	System Off (*PWR cable not connected)
Green	System On
Green: Flashing Quickly	ACPI S1 State
Green: Flashing Slowly	ACPI S3 (STR) State



A. GLAN Port1 LEDs
B. GLAN Port2 LEDs
C. Onboard PWR LED

POST Code LED Indicators (LE4, LE5)

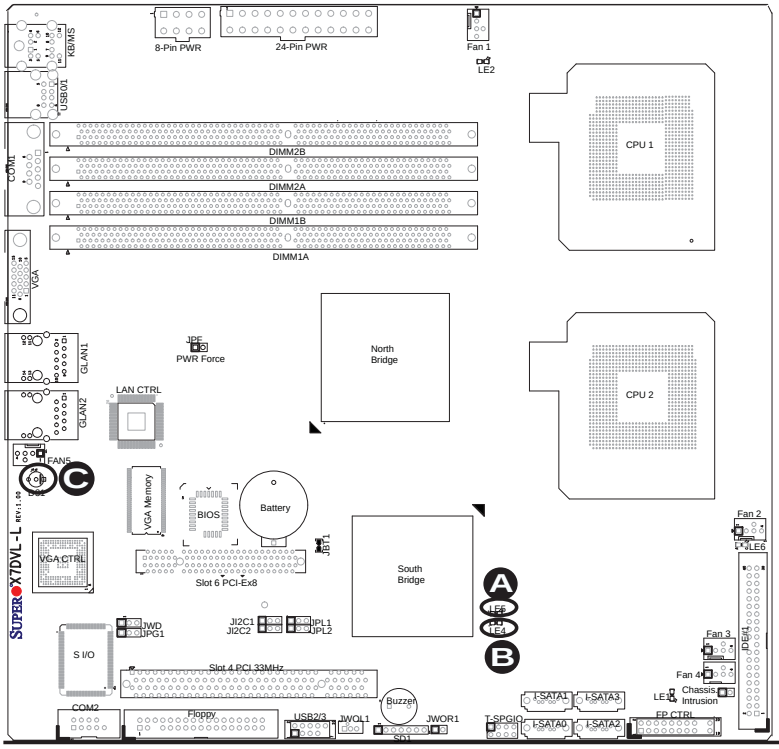
There are two POST Code LED Indicators (LE4, LE5) located on the motherboard. These two LEDs are used to indicate POST (Power On Self Test) Code Messages through different sets of green and yellow light combinations. Refer to the table on the right for POST Code Messages. See the layout below for the LED location.

POST Code LED Indicators		
LE4	LE5	POST Code Message
Green: On	Yellow: Off	Memory Initialization @ POST 28h
Green: Off	Yellow: On	System Shadowing @ POST 38h
Green: On	Yellow: On	CPU Initialization @ POST 0Ah
Green Off	Yellow: Off	PCI Initialization @ POST 49h

Status LED (D31)

There is a Status LED Indicator (D31) located on the motherboard. This LED displays different colors to show the status of the system. Refer to the table on the right for system status. See the layout below for the LED location.

Status LED Indicator	
LED Color	Definition
Green	Power On, system: normal
Red	PWR on, PWR problem(s) occur(s) or JPW3 not properly installed
Yellow	S5 or S4



A. LE4: POST Code LED

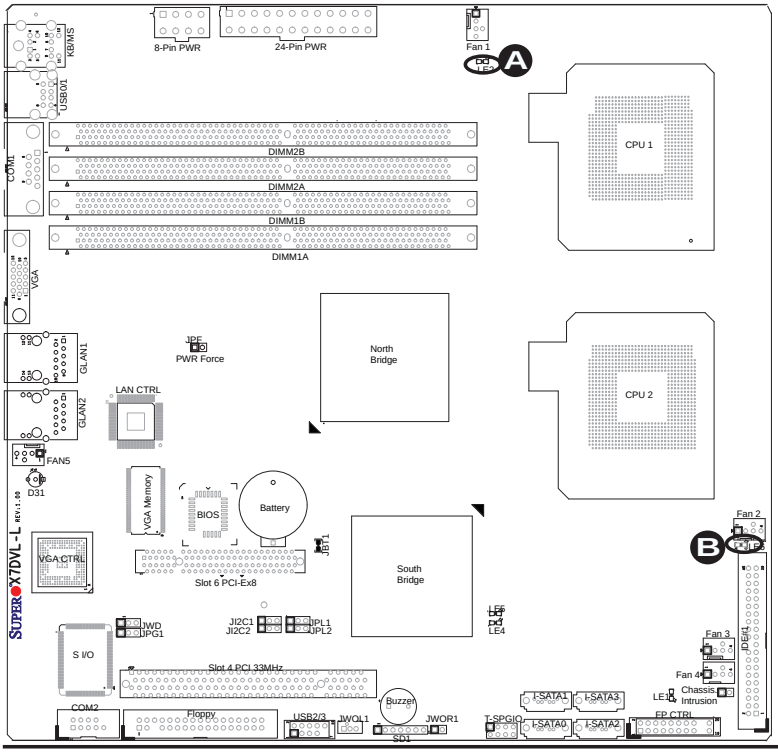
B. LE5: POST Code LED

C. D31: Status LED

CPU VRM Overheat LED Indicators (LE2/LE6)

There are two CPU VRM Overheat LED Indicators (LE2 and LE6) are on the motherboard. LE2 is for CPU1VRM and LE6 is for CPU2 VRM. If the temperature of a CPU VRM is normal, its CPU VRM Overheat LED is off. When a CPU VRM is over 90^{o}C, its CPU VRM Overheat LED will turn yellow, and the CPU will slow down to prevent the CPU VRM from overheating. See the layout below for the LED locations.

CPU VRM Overheat LEDs (LE2, LE6)	
LED Color	Definition
Off	CPU VRM Temperature: Normal
Yellow	CPU VRM over 90^{0}C, CPU slows down



2-8 Floppy Drive and Hard Disk Drive Connections

Note the following when connecting the floppy and hard disk drive cables:

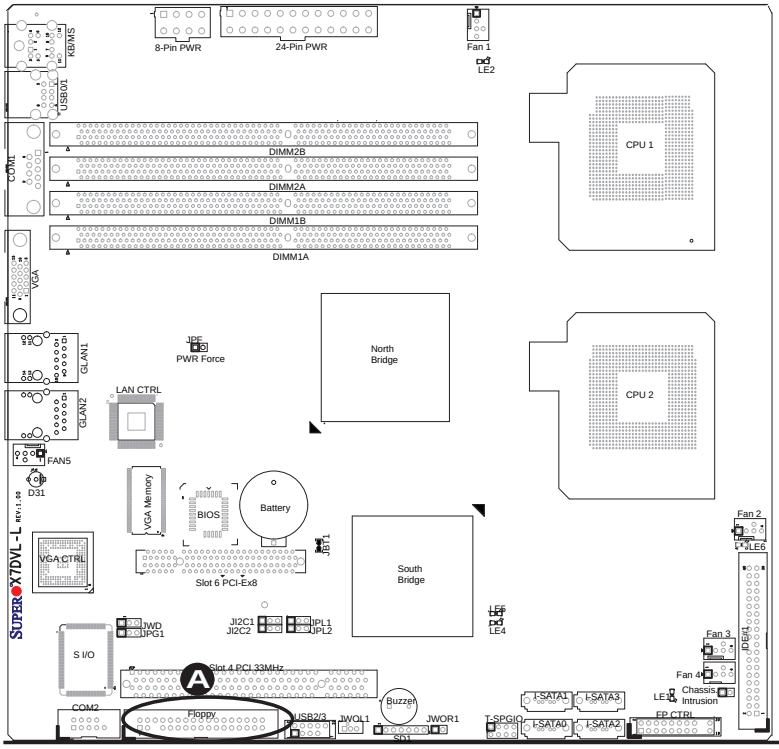
- The floppy disk drive cable has seven twisted wires.
- A red mark on a wire typically designates the location of pin 1.

Floppy Connector

The floppy connector is located at J22. See the table below for pin definitions.

Floppy Drive Connector Pin Definitions

Pin#	Definition	Pin #	Definition
1	Ground	2	FDHDIN
3	Ground	4	Reserved
5	Key	6	FDEDIN
7	Ground	8	Index
9	Ground	10	Motor Enable
11	Ground	12	Drive Select B
13	Ground	14	Drive Select B
15	Ground	16	Motor Enable
17	Ground	18	DIR
19	Ground	20	STEP
21	Ground	22	Write Data
23	Ground	24	Write Gate
25	Ground	26	Track 00
27	Ground	28	Write Protect
29	Ground	30	Read Data
31	Ground	32	Side 1 Select
33	Ground	34	Diskette



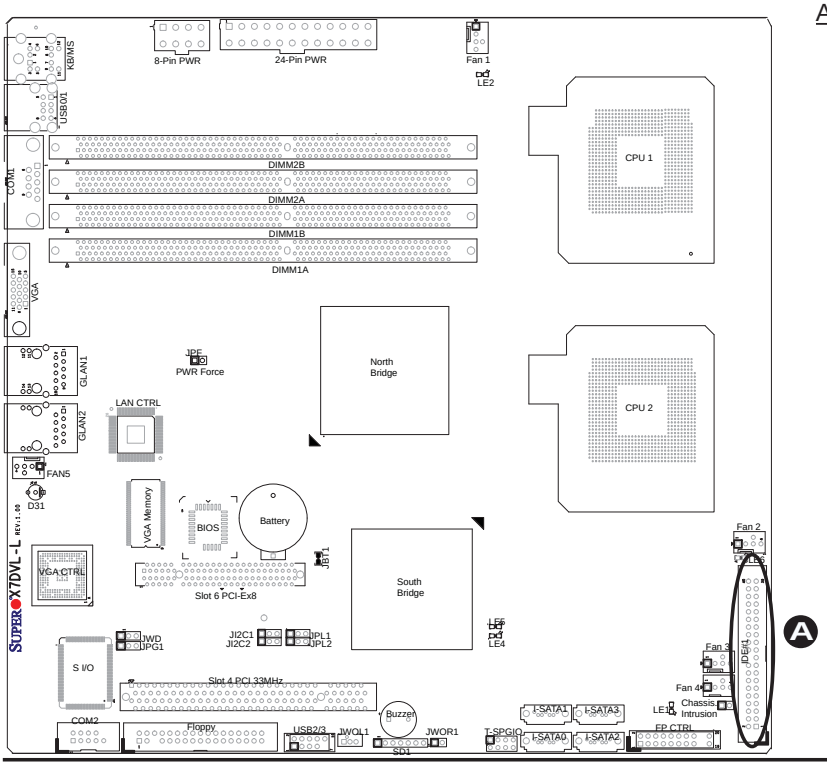
A. Floppy

IDE Connector

An IDE Connector is located at JIDE1 on the motherboard. See the table on the right for pin definitions.

IDE Drive Connectors Pin Definitions

Pin#	Definition	Pin #	Definition
1	Reset IDE	2	Ground
3	Host Data 7	4	Host Data 8
5	Host Data 6	6	Host Data 9
7	Host Data 5	8	Host Data 10
9	Host Data 4	10	Host Data 11
11	Host Data 3	12	Host Data 12
13	Host Data 2	14	Host Data 13
15	Host Data 1	16	Host Data 14
17	Host Data 0	18	Host Data 15
19	Ground	20	Key
21	DRQ3	22	Ground
23	I/O Write	24	Ground
25	I/O Read	26	Ground
27	IOCHRDY	28	BALE
29	DACK3	30	Ground
31	IRQ14	32	IOCS16
33	Addr1	34	Ground
35	Addr0	36	Addr2
37	Chip Select 0	38	Chip Select 1
39	Activity	40	Ground



A. IDE#1

Chapter 3

Troubleshooting

3-1 Troubleshooting Procedures

Use the following procedures to troubleshoot your system. If you have followed all of the procedures below and still need assistance, refer to the 'Technical Support Procedures' and/or 'Returning Merchandise for Service' section(s) in this chapter. **Note: Always disconnect the power cord before adding, changing or installing any hardware components.**

Before Power On

1. Make sure that there are no short circuits between the motherboard and the chassis.
2. Disconnect all ribbon/wire cables from the motherboard, including those for the keyboard and mouse.
3. Remove all add-on cards.
4. Install a CPU in the CPU Socket and connect the chassis speaker and the power LED to the motherboard. (Make sure that the CPU is properly seated. Be sure to check all jumper settings as well.)
5. Use only the correct type of CMOS onboard battery as recommended by the Manufacturer. Do not install the onboard battery upside down to avoid possible explosion.

No Power

1. Make sure that there are no short circuits between the motherboard and the chassis.
2. Make sure that all jumpers are set to their default positions.
3. Make sure that the 115V/230V switch on the power supply is properly set.
4. Turn the power switch on and off to test the system.
5. The battery on your motherboard may be old. Check to make sure that it still supplies ~3VDC. If it does not, replace it with a new one.

No Video

1. If the power is on but you have no video, remove all the add-on cards and cables.
2. Use the speaker to determine if any beep codes exist. Refer to the Appendix B for details on beep codes.

Losing the System's Setup Configuration

1. Make sure that you are using a high quality power supply. A poor quality power supply may cause the system to lose the CMOS setup information. Refer to Section 1-6 for details on recommended power supplies.
2. The battery on your motherboard may be old. Check to make sure that it still supplies ~3VDC. If it does not, replace it with a new one.
3. If the above steps do not fix the Setup Configuration problem, contact your vendor for repairs.

NOTE

If you are a system integrator, VAR or OEM, a POST diagnostics card is recommended. For I/O port 80h codes, refer to App. B.

Memory Errors

1. Make sure that the DIMM modules are properly and fully installed.
2. Check if DIMMs of different speeds or types have been installed and make sure that the BIOS setup is configured for the fastest speed of RAM used. It is recommended that you use DIMM modules of the same type and same speed on a motherboard.
3. Make sure that you are using the correct type of DDR2 Fully Buffered (FBD) ECC 533/667 SDRAM (*recommended by the manufacturer.)
4. Check for bad DIMM modules or slots by swapping a single module between four slots and noting the results.
5. Make sure all memory modules are fully seated in their slots. As an interleaved memory scheme is used, you must install two modules at a time, beginning with Bank 1, then Bank 2, and so on (see Section 2-3).
6. Check the position of the 115V/230V switch on the power supply.

3-2 Technical Support Procedures

Before contacting Technical Support, please take the following steps. Also, note that as a motherboard manufacturer, Super Micro does not sell directly to end-users, so it is best to first check with your distributor or reseller for troubleshooting services. They should know of any possible problem(s) with the specific system configuration that was sold to you.

1. Please go through the 'Troubleshooting Procedures' and 'Frequently Asked Question' (FAQ) sections in this chapter or see the FAQs on our website (http://www.supermicro.com/support/faqs/) before contacting Technical Support.
2. BIOS upgrades can be downloaded from our web site at (http://www.supermicro.

com/support/bios/)

3. If you still cannot resolve the problem, include the following information when contacting Super Micro for technical support:

   •Motherboard model and PCB revision number

   •BIOS release date/version (this can be seen on the initial display when your system first boots up)

   •System configuration

   An example of a Technical Support form is on our web site at (http://www.supermicro.com/support/contact.cfm).

4. Distributors: For immediate assistance, please have your account number ready when placing a call to our technical support department. We can be reached by e-mail at support@supermicro.com or by fax at: (408) 503-8000, option 2.

3-3 Frequently Asked Questions

Question: What are the various types of memory that my motherboard can support?

Answer: The X7DVL-L has four 240-pin DIMM slots that support DDR2 FBD ECC 533/667 SDRAM modules. It is strongly recommended that you do not mix memory modules of different speeds and sizes. (See Chapter 2 for detailed Information.)

Question: How do I update my BIOS?

Answer: It is recommended that you do not upgrade your BIOS if you are not experiencing any problems with your system. Updated BIOS files are located on our web site at http://www.supermicro.com/support/bios/. Please check our BIOS warning message and the information on how to update your BIOS on our web site. Select your motherboard model and download the BIOS file to your computer. Also, check the current BIOS revision and make sure that it is newer than your BIOS before downloading. You can choose from the zip file and the .exe file. If you choose the zip BIOS file, please unzip the BIOS file onto a bootable device or a USB pen. Run the batch file using the format flash.bat filename.rom from your bootable device or USB pen to flash the BIOS. Then, your system will automatically reboot. If you choose the .exe file, please run the .exe file under Windows to create the BIOS flash floppy disk. Insert the floppy disk into the system you wish to flash the BIOS. Then, bootup the system to the floppy disk. The BIOS utility will automatically flash the BIOS without any prompts. Please note that this process may take a few minutes to complete. Do not be concerned if the screen is paused for a few minutes.

(**Warning**: Do not shut down or reset the system while updating BIOS to prevent possible system boot failure!)

Question: What's on the CD that came with my motherboard?

Answer: The supplied compact disc has quite a few drivers and programs that will greatly enhance your system. We recommend that you review the CD and install the applications you need. Applications on the CD include chipset drivers, security and audio drivers.

3-4 Returning Merchandise for Service

A receipt or copy of your invoice marked with the date of purchase is required before any warranty service will be rendered. You can obtain service by calling your vendor for a Returned Merchandise Authorization (RMA) number. When returning to the manufacturer, the RMA number should be prominently displayed on the outside of the shipping carton, and mailed prepaid or hand-carried. Shipping and handling charges will be applied for all orders that must be mailed when service is complete.

For faster service, You can also request a RMA authorization online (http://www.supermicro.com/support/rma/).

This warranty only covers normal consumer use and does not cover damages incurred in shipping or from failure due to the alternation, misuse, abuse or improper maintenance of products.

During the warranty period, contact your distributor first for any product problems.

Chapter 4

BIOS

4-1 Introduction

This chapter describes the Phoenix BIOS™ Setup utility for the X7DVL-L. The Phoenix ROM BIOS is stored in a flash chip and can be easily upgraded using a floppy disk-based program.

Note: Due to periodic changes to the BIOS, some settings may have been added or deleted and might not yet be recorded in this manual. Please refer to the Manual Download area of the Super Micro web site <http://www.supermicro.com> for any changes to the BIOS that may not be reflected in this manual.

System BIOS

The BIOS is the Basic Input Output System used in all IBM® PC, XT™, AT®, and PS/2® compatible computers. The Phoenix BIOS stores the system parameters, types of disk drives, video displays, etc. in the CMOS. The CMOS memory requires very little electrical power. When the computer is turned off, a backup battery provides power to the CMOS Logic, enabling it to retain system parameters. Each time the computer is powered on, the computer is configured with the values stored in the CMOS Logic by the system BIOS, which gains control at boot up.

How To Change the Configuration Data

The CMOS information that determines the system parameters may be changed by entering the BIOS Setup utility. This Setup utility can be accessed by pressing the <Delete> key at the appropriate time during system boot. (See below.)

Starting the Setup Utility

Normally, the only visible POST (Power On Self Test) routine is the memory test. As the memory is being tested, press the <Delete> key to enter the main menu of the BIOS Setup utility. From the main menu, you can access the other setup screens, such as the Security and Power menus. Beginning with Section 4-3, detailed descriptions are given for each parameter setting in the Setup utility.

Warning: Do not shut down or reset the system while updating BIOS to prevent possible boot failure.

4-2 Running Setup

**Default settings are in bold text unless otherwise noted.*

The BIOS setup options described in this section are selected by choosing the appropriate text from the main BIOS Setup screen. All displayed text is described in this section, although the screen display is often all you need to understand how to set the options (see the next page).

When you first power on the computer, the Phoenix BIOS™ is immediately activated.

While the BIOS is in control, the Setup program can be activated in one of two ways:

1. By pressing <Delete> immediately after turning the system on, or

2. When the message shown below appears briefly at the bottom of the screen during the POST (Power On Self-Test), press the <Delete> key to activate the main Setup menu:

Press the <Delete> key to enter Setup

4-3 Main BIOS Setup

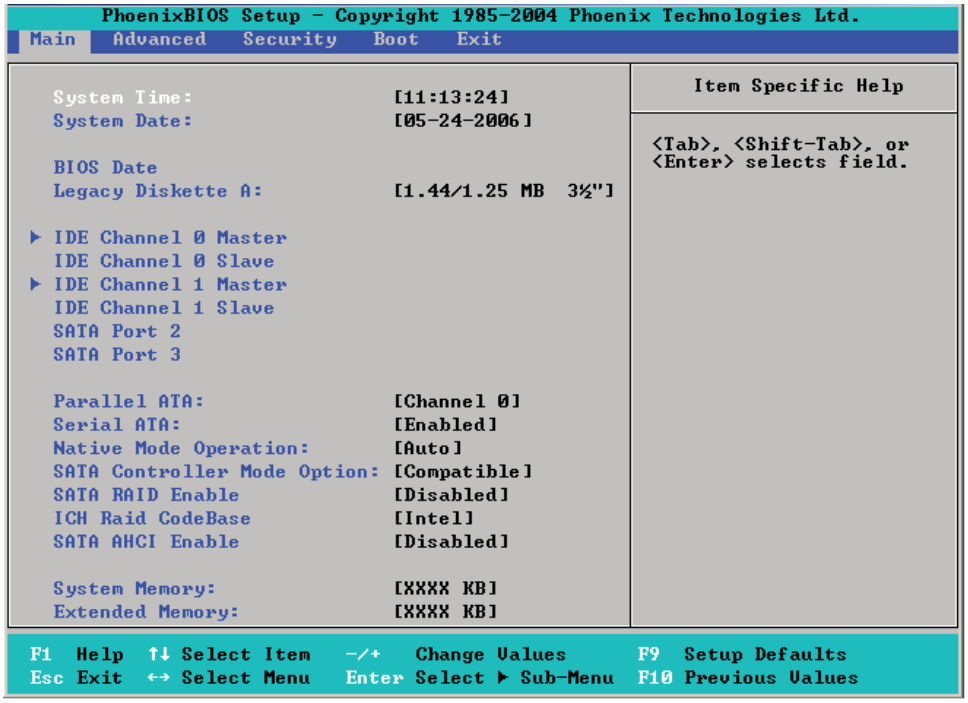
All main Setup options are described in this section. The main BIOS Setup screen is displayed below.

Use the Up/Down arrow keys to move among the different settings in each menu. Use the Left/Right arrow keys to change the options for each setting.

Press the <Esc> key to exit the CMOS Setup Menu. The next section describes in detail how to navigate through the menus.

Items that use submenus are indicated with the ▶icon. With the item highlighted, press the <Enter> key to access the submenu.

Main BIOS Setup Menu


PhoenixBIOS Setup – Copyright 1985-2004 Phoenix Technologies Ltd.
Main Advanced Security Boot Exit
System Time: [11:13:24]
System Date: [05-24-2006]
BIOS Date
Legacy Diskette A: [1.44/1.25 MB 3½"]
▶ IDE Channel 0 Master
IDE Channel 0 Slave
▶ IDE Channel 1 Master
IDE Channel 1 Slave
SATA Port 2
SATA Port 3
Parallel ATA: [Channel 0]
Serial ATA: [Enabled]
Native Mode Operation: [Auto]
SATA Controller Mode Option: [Compatible]
SATA RAID Enable [Disabled]
ICH Raid CodeBase [Intel]
SATA AHCI Enable [Disabled]
System Memory: [XXXX KB]
Extended Memory: [XXXX KB]
Item Specific Help
<Tab>, <Shift-Tab>, or <Enter> selects field.
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ↔ Select Menu Enter Select ▶ Sub-Menu F10 Previous Values

Main Setup Features

System Time

To set the system date and time, key in the correct information in the appropriate fields. Then press the <Enter> key to save the data.

System Date

Using the arrow keys, highlight the month, day and year fields, and enter the correct data. Press the <Enter> key to save the data.

BIOS Version

This field displays the current BIOS version.

BIOS Date

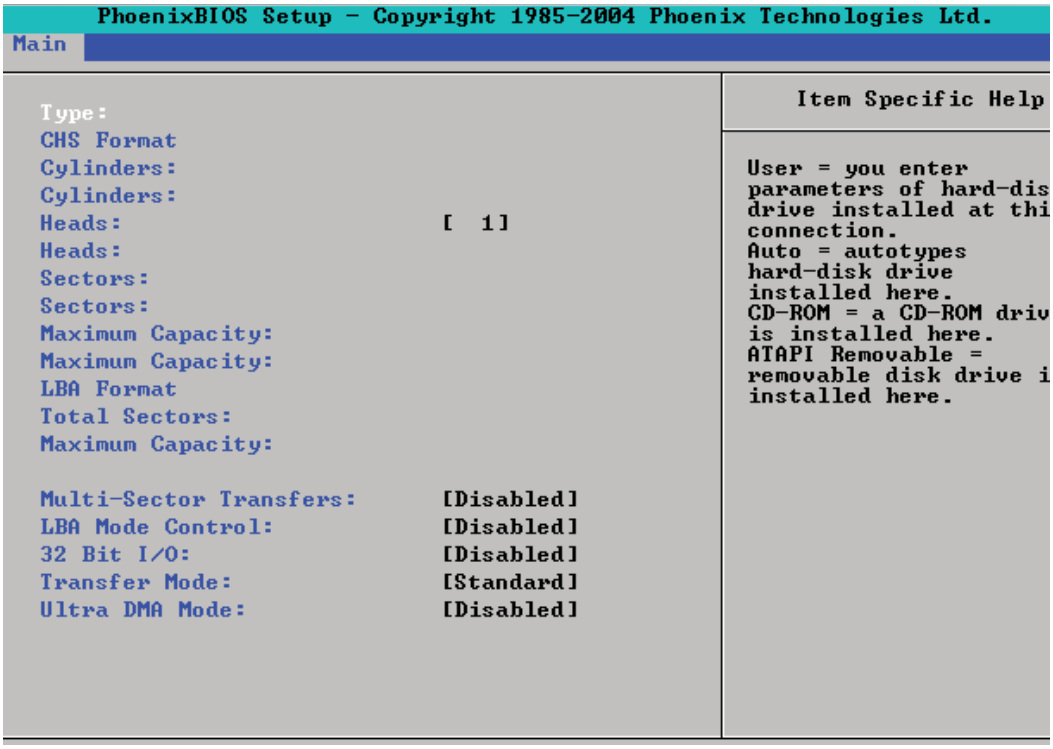
This field displays the date when this version of BIOS was built.

Legacy Diskette A

This setting allows the user to set the type of floppy disk drive installed as diskette A. The options are Disabled, 360Kb 5.25 in, 1.2MB 5.25 in, 720Kb 3.5 in, **1.44/1.25MB**, 3.5 in and 2.88MB 3.5 in.

▶IDE Channel 0 Master/Slave, IDE Secondary Master/Slave, SATA Port2 and SATA Port3

These settings allow the user to set the parameters of IDE Channel 0 Master/ Slave, IDE Channel 1 Master/Slave, IDE Channel 2 Master, IDE Channel 3 Master slots. Hit <Enter> to activate the following sub-menu screen for detailed options of these items. Set the correct configurations accordingly. The items included in the sub-menu are:



Type

This option allows the user to select the type of IDE hard drive. Select **Auto** to allow the BIOS to automatically configure the parameters of the HDD installed at the connection. Enter a number between 1 to 39 to select a predetermined HDD type. Select User to allow the user to enter the parameters of the HDD installed. Select CDROM if a CDROM drive is installed. Select ATAPI if a removable disk drive is installed.

CHS Format

The following items will be displayed by the BIOS:

TYPE: This item displays the type of IDE or SATA Device.

Cylinders: This item indicates the status of Cylinders.

Headers: This item indicates the number of headers.

Sectors: This item displays the number of sectors.

Maximum Capacity: This item displays the maximum storage capacity of the system.

LBA Format

The following items will be displayed by the BIOS:

Total Sectors: This item displays the number of total sectors available in the LBA Format.

Maximum Capacity: This item displays the maximum capacity in the LBA Format.

Multi-Sector Transfers

This item allows the user to specify the number of sectors per block to be used in multi-sector transfer. The options are **Disabled**, 4 Sectors, 8 Sectors, and 16 Sectors.

LBA Mode Control

This item determines whether the Phoenix BIOS will access the IDE Channel 0 Master Device via the LBA mode. The options are Enabled and **Disabled.**

32 Bit I/O

This option allows the user to enable or disable the function of 32-bit data transfer. The options are Enabled and **Disabled**.

Transfer Mode

This option allows the user to set the transfer mode. The options are **Standard**, Fast PIO1, Fast PIO2, Fast PIO3, Fast PIO4, FPIO3/DMA1 and FPIO4/DMA2.

Ultra DMA Mode

This option allows the user to select Ultra DMA Mode. The options are **Disabled**, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4, and Mode 5.

Parallel ATA

This setting allows the user to enable or disable the function of the Parallel ATA. The options are Disabled and **Enabled**.

Serial ATA

This setting allows the user to enable or disable the function of the Serial ATA. The options are Disabled and **Enabled.**

Native Mode Operation

Select the native mode for ATA. The options are: Parallel ATA, Serial ATA, Both, and **Auto**.

SATA Controller Mode

Select **Compatible** to allow the SATA and PATA drives to be automatically-detected and be placed in the Legacy Mode by the BIOS. Select Enhanced to allow the SATA and PATA drives to be to be automatically-detected and be placed in the Native IDE Mode. (***Note: The Enhanced mode is supported by the Windows 2000 OS or a later version.)**

When the SATA Controller Mode is set to "Enhanced", the following items will display:

Serial ATA (SATA) RAID Enable

Select Enable to enable Serial ATA RAID Functions. (*For the Windows OS environment, use the RAID driver if this feature is set to Enabled. If this item is set to **Disabled**, the item-SATA AHCI Enable will be available.) The options are Enabled and **Disabled**.

SATA AHCI

Select Enable to enable the function of Serial ATA Advanced Host Interface. (*Take caution when using this function. This feature is for advanced programmers only. The options are Enabled and **Disabled**.)

System Memory

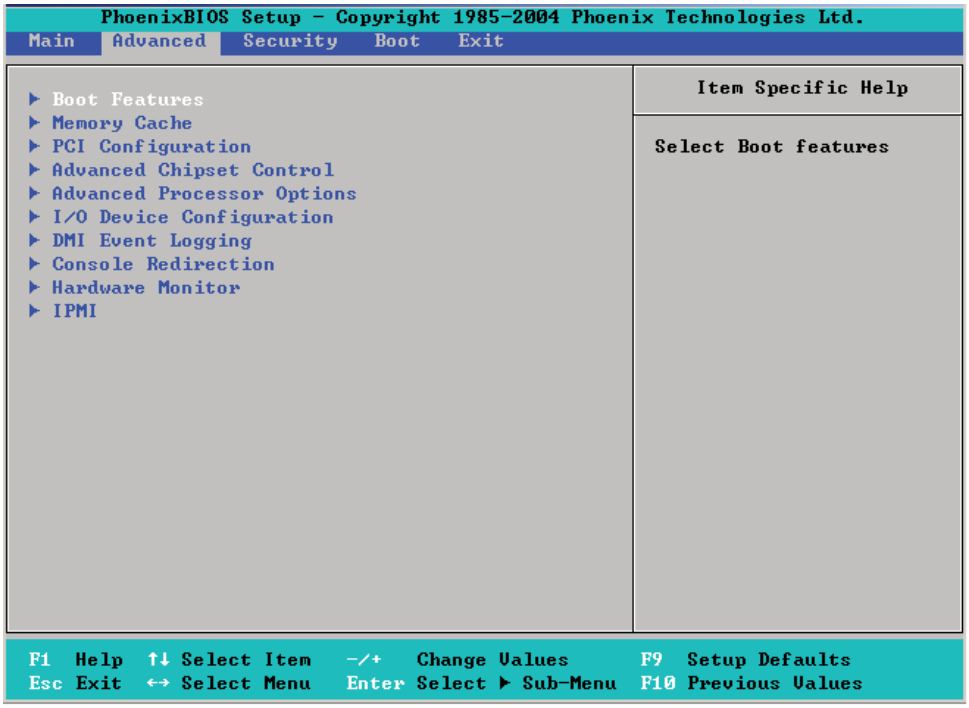
This display informs you how much system memory is recognized as being present in the system.

Extended Memory

This display informs you how much extended memory is recognized as being present in the system.

4-4 Advanced Setup

Choose Advanced from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. The items with a triangle beside them have sub menus that can be accessed by highlighting the item and pressing <Enter>.



▶Boot Features

Access the submenu to make changes to the following settings.

QuickBoot Mode

If enabled, this feature will speed up the POST (Power On Self Test) routine by skipping certain tests after the computer is turned on. The settings are **Enabled** and Disabled. If Disabled, the POST routine will run at normal speed.

QuietBoot Mode

This setting allows you to **Enable** or Disable the graphic logo screen during boot-up.

POST Errors

Set to **Enabled** to display POST Error Messages if an error occurs during bootup. If set to Disabled, the system will continue to boot without displaying any error message even when a boot error occurs.

ACPI Mode

Use the setting to determine if you want to employ ACPI (Advanced Configuration and Power Interface) power management on your system. The options are **Yes** and No.

Power Button Behavior

If set to **Instant-Off**, the system will power off immediately as soon as the user hits the power button. If set to 4-sec., the system will power off when the user presses the power button for 4 seconds or longer. The options are **instant-off** and 4-sec override.

Resume On Modem Ring

Select On to "wake your system up" when an incoming call is received by your modem. The options are On and **Off**.

Power Loss Control

This setting allows you to choose how the system will react when power returns after an unexpected loss of power. The options are Stay Off, Power On, and Last State.

Watch Dog

If enabled, this option will automatically reset the system if the system is not active for more than 5 minutes. The options are Enabled and **Disabled**.

Summary Screen

This setting allows you to **Enable** or Disable the summary screen which displays the system configuration during bootup.

▶Memory Cache

Cache System BIOS Area

This setting allows you to designate a reserve area in the system memory to be used as a System BIOS buffer to allow the BIOS to write (cache) data into this reserved memory area. Select **Write Protect** to enable this function, and this area will be reserved for BIOS ROM access only. Select Uncached to disable this function and make this area available for other devices.

Cache Video BIOS Area

This setting allows you to designate a reserve area in the system memory to be used as a Video BIOS buffer to allow the BIOS to write (cache) data into this reserved memory area. Select **Write Protect** to enable the function and this area will be reserved for Video BIOS ROM access only. Select Uncached to disable this function and make this area available for other devices.

Cache Base 0-512K

If enabled, this feature will allow the data stored in the base memory area: block 0-512K to be cached (written) into a buffer, a storage area in the Static DROM (SDROM) or to be written into L1, L2 cache inside the CPU to speed up CPU operations. Select Uncached to disable this function. Select Write Through to allow data to be cached into the buffer and written into the system memory at the same time. Select Write Protect to prevent data from being written into the base memory

area of Block 0-512K. Select Write Back to allow the CPU to write data back directly from the buffer without writing data to the System Memory for fast CPU data processing and operation. The options are Uncached, Write Through, Write Protect, and **Write Back**.

Cache Base 512K-640K

If enabled, this feature will allow the data stored in the memory area: 512K-640K to be cached (written) into a buffer, a storage area in the Static DROM (SDROM) or written into L1, L2, L3 cache inside the CPU to speed up CPU operations. Select Uncached to disable this function. Select Write Through to allow data to be cached into the buffer and written into the system memory at the same time. Select Write Protect to prevent data from being written into the base memory area of Block 512-640K. Select Write Back to allow the CPU to write data back directly from the buffer without writing data to the System Memory for fast CPU data processing and operation. The options are Uncached, Write Through, Write Protect, and **Write Back**.

Cache Extended Memory

If enabled, this feature will allow the data stored in the extended memory area to be cached (written) into a buffer, a storage area in the Static DROM (SDROM) or written into L1, L2, L3 cache inside the CPU to speed up CPU operations. Select Uncached to disable this function. Select Write Through to allow data to be cached into the buffer and written into the system memory at the same time. Select Write Protect to prevent data from being written into the extended memory area above 1MB. Select Write Back to allow the CPU to write data back directly from the buffer without writing data to the System Memory for fast CPU data processing and operation. The options are Uncached, Write Through, Write Protect, and **Write Back**.

Discrete MTRR Allocation

If enabled, MTRRs (-Memory Type Range Registers) are configured as distinct, separate units and cannot be overlapped. If enabled, the user can achieve better graphic effects when using a Linux graphic driver that requires the write-combining configuration with 4GB or more memory. The options are Enabled and **Disabled**.

▶PCI Configuration

Access the submenu to make changes to the following settings for PCI devices.

Onboard GLAN1/Onboard GLAN2 (Gigabit- LAN) OPROM Configure

Enabling this option provides the capability to boot from GLAN. The options are **Disabled** and Enabled.

Default Primary Video Adapter

Use this feature to select the default primary video adaptor for the system. The options are Other and **Onboard Video**.

Emulated IRQ Solution

All PCI-E devices are required to support MSI (Message Signaled Interrupt); however, some legacy operating systems do not support MSI. When this feature is set to Enabled, a PCI-E device will generate a device-specific address and interrupt vector number stored in the device's MSI and data registers which will be initialized by BIOS before a "non-MSI-aware" OS boots up in order to enhance system performance. The options are Enabled and **Disabled**.

Onboard Storage OPROM Configure

Enabling this option provides the capability to boot from an onboard storage device. The options are **Enabled** and Disabled.

PCI-Exp. I/O Performance

Some add-on cards perform faster with the coalesce feature, which limits the payload size to 128 Bytes; while others, with a payload size of 256 Bytes which inhibits the coalesce feature. Please refer to your add-on card user guide for the desired setting. The options are Coalesce and **128 Bytes**.

PCI Parity Error Forwarding

The feature allows SERR and PERR errors detected in PCI slots to be sent (forwarded) to the BIOS DMI Event Log for the user to review. The options are Enabled and **Disabled**.

ROM Scan Ordering

This feature allows the user to decide which Option ROM to be activated first. The options are **Onboard first** and Add-On first.

PCI Fast Delay Transactions

Select Enabled to use this feature which will improve performance on heavy DMA transfer for PCI 32-bit multimedia cards. The options are Enabled and **Disabled**.

Reset Configuration Data

If set to Yes, this setting clears the Extended System Configuration Data- (ESCD) area. The options are Yes and **No**.

Frequency for PCI-X#5-#6

This option allows the user to change the bus frequency for the devices installed in the slot indicated. The options are **Auto**, PCI 33 MHz, PCI 66 MHz, PCI-X 66 MHz, PCI-X 100 MHz, and PCI-X 133 MHz.

▶Slot1 PCI 33MHz, Slot5 PCI-X 133MHz, Slot6 PCI-X 133MHz, Slot6 <Ext> PCI-Exp. x8

Access the submenu for each of the settings above to make changes to the following:

Option ROM Scan

When enabled, this setting will initialize the device expansion ROM. The options are **Enabled** and Disabled.

Enable Master

This setting allows you to enable the selected device as the PCI bus master. The options are **Enabled** and Disabled.

Latency Timer

This setting allows you to set the clock rate for Bus Master. A high-priority, high-throughout device may benefit from a greater clock rate. The options are **Default**, 0020h, 0040h, 0060h, 0080h, 00A0h, 00C0h, and 00E0h. For Unix, Novell and other Operating Systems, please select the option: other. If a drive fails after the installation of a new software, you might want to change this setting and try again. A different OS requires a different Bus Master clock rate**.**

Large Disk Access Mode

This setting determines how large hard drives are to be accessed. The options are **DOS** or Other (for Unix, Novelle NetWare and other operating systems).

▶Advanced Chipset Control

Access the submenu to make changes to the following settings.

Warning: Take Caution when changing the Advanced settings. An incorrect setup, a very high DRAM frequency or an incorrect DRAM timing may cause the system become unstable. When this occurs, reset the setting to the default setting.

SERR Signal Condition

This setting specifies the ECC Error conditions that an SERR# is to be asserted. The options are None, **Single Bit**, Multiple Bit, and Both.

4GB PCI Hole Granularity

This feature allows you to select the granularity of PCI hole for PCI slots. If MTRRs are not enough, this option may be used to reduce MTRR occupation. The options are: **256 MB**, 512 MB, 1GB and 2GB.

Memory Branch Mode

This option determines how the memory branch operates. System address space can either be interleaved between two channels or Sequential from one channel to another. Single Channel 0 allows a single DIMM population during system manufacturing. The options are **Sequential** and Single Channel 0.

Branch 0 Rank Interleaving

Select enable to enable the functions of Memory Interleaving for Branch 0 Rank. The options for Memory Interleaving are 1:1, 2:1 and **4:1**.

Branch 0 Rank Sparing

Select enable to enable the sparing feature for Branch 0 Rank. The options are Enabled and **Disabled**.

Enhanced x8 Detection

Select **Enabled** to enable Enhanced x8 DRAM UC Error Detection. The options are Disabled and **Enabled**.

High Bandwidth FSB

Select Enabled to enable high bandwidth Front Side Bus (FSB). The options are **Enabled** and Disabled.

High Temperature DRAM Operation

When set to Enabled, the BIOS will refer to the SPD table to set the maximum DRAM temperature. If disabled, the BIOS will set the maximum DRAM temperature based on a predefined value. The options are Enabled and **Disabled**.

AMB Thermal Sensor

Select Enabled to enable the thermal sensor embedded in Advanced Memory Buffer on a fully buffered memory module for thermal monitoring. The options are **Disabled** and Enabled.

Thermal Throttle

Select Enabled to enable the function of closed-loop thermal throttling on the fully buffered (FBD) memory modules. In the closed-loop thermal environment, thermal throttling will be activated when the temperature of the FBD DIMM device exceeds a predefined threshold. The options are Enabled and **Disabled**.

Global Activation Throttle

Select Enabled to enable the function of open-loop global thermal throttling on the fully buffered (FBD) memory modules and allow global thermal throttling to become active when the number of activate controls exceed a predefined number. The options are Enabled and **Disabled**.

Snoop Filter

Select Enabled to eliminate snoop traffic to the graphics port to greatly improve system performance when running graphics intensive applications. The options are **Enabled** and Disabled.

Crystal Beach Features

This feature cooperates with the Intel I/O AT (Acceleration Technology) to accelerate the performance of TOE devices. (*Note: A TOE device is a specialized, dedicated processor that is installed on an add-on card or a network card to handle some or all packet processing of this add-on card. For this motherboard, the TOE device is built inside the ESB 2 South Bridge chip.) The options are **Enabled** and Disabled.

Route Port 80h Cycles to

This feature allows the user to decide which bus to send debug information to. The options are Disabled, PCI and **LPC**.

Clock Spectrum Feature

If Enabled, the BIOS will monitor the level of Electromagnetic Interference caused by the components and will attempt to decrease the interference whenever needed. The options are Enabled and **Disabled**.

High Performance Event Timer

Select Enabled to activate the High Performance Event Timer (HPET) that produces periodic interrupts at a much higher frequency than a Real-time Clock (RTC) does in synchronizing multimedia streams, providing smooth playback and reducing the dependency on other timestamp calculation devices, such as an x86 RDTSC Instruction embedded in the CPU. The High Performance Event Timer is used to replace the 8254 Programmable Interval Timer. The options are **Enabled** and Disabled.

Enabling Multi-Media Timer

Select Yes to activate a set of timers that are alternative to the traditional 8254 timers for the OS use. The options are Yes and **No**.

USB Function

Select Enabled to enable the function of USB devices specified. The settings are **Enabled** and Disabled.

Legacy USB Support

This setting allows you to enable support for Legacy USB devices. The settings are **Enabled** and Disabled.

▶Advanced Processor Options

Access the submenu to make changes to the following settings.

CPU Speed

This is a display that indicates the speed of the installed processor.

Frequency Ratio (Available when supported by the CPU.)

The feature allows the user to set the internal frequency multiplier for the CPU. The options are: **Default,** x12, x13, x14, x15, x16, x17 and x18.

Core-Multi-Processing (Available when supported by the CPU.)

Set to Enabled to use a processor's Second Core and beyond. (Please refer to Intel's web site for more information.) The options are Disabled and **Enabled.**

Machine Checking (Available when supported by the CPU.)

Set to Enabled to activate the function of Machine Checking and allow the CPU

to detect and report hardware (machine) errors via a set of model-specific registers (MSRs). The options are Disabled and **Enabled**.

Thermal Management 2 (Available when supported by the CPU.)

Set to **Enabled** to use Thermal Management 2 (TM2) which will lower CPU voltage and frequency when the CPU temperature reaches a predefined overheat threshold. Set to Disabled to use Thermal Manager 1 (TM1), allowing CPU clocking to be regulated via CPU Internal Clock modulation when the CPU temperature reaches the overheat threshold.

C1 Enhanced Mode (Available when supported by the CPU.)

Set to Enabled to enable Enhanced Halt State to lower CPU voltage/frequency to prevent overheat. The options are Enabled and **Disabled**. (**Note:** please refer to Intel's web site for detailed information.)

Execute Disable Bit (Available when supported by the CPU.)

Set to Enabled to enable Execute Disable Bit and allow the processor to classify areas in memory where an application code can execute and where it cannot, and thus preventing a worm or a virus from inserting and creating a flood of codes to overwhelm the processor or damage the system during an attack.

(*Note: this feature is available when your OS and your CPU support the function of Execute Disable Bit.) The options are Disabled and **Enabled**. (Note: For more information regarding hardware/software support for this function, please refer to Intel's and Microsoft's web sites.)

Adjacent Cache Line Prefetch (Available when supported by the CPU.)

The CPU fetches the cache line for 64 bytes if this option is set to Disabled. The CPU fetches both cache lines for 128 bytes as comprised if Enabled. The options are **Disabled** and Enabled.

Hardware Prefetcher (Available when supported by the CPU.)

Set to this option to **enabled** to enable the hardware components that are used in conjunction with software programs to prefetch data in order to shorten execution cycles and maximize data processing efficiency. The options are Disabled and **Enabled**.

Direct Cache Access (Available when supported by the CPU.)

Set to Enable to route inbound network IO traffic directly into processor caches to reduce memory latency and improve network performance. The options are **Disabled** and Enabled.

DCA Delay Clocks (Available when supported by the CPU.)

This feature allows the user to set the clock delay setting from snoop to prefetch for Direct Cache Access. Select a setting from 8 (bus cycles) to 120 (bus cycles) (in 8-cycle increment). The default setting is **32 (bus cycles)**.

Intel <R> Virtualization Technology (*Available when supported by the CPU.)

Select Enabled to use the feature of Virtualization Technology to allow one platform to run multiple operating systems and applications in independent partitions, creating multiple "virtual" systems in one physical computer. The options are Enabled and **Disabled**. (Note: If there is any change to this setting, you will need to power off and restart the system for the change to take effect.) Please refer to Intel's web site for detailed information.

Intel EIST Support (*Available when supported by the CPU.)

Select Enabled to use the Enhanced Intel SpeedStep Technology and allow the system to automatically adjust processor voltage and core frequency in an effort to reduce power consumption and heat dissipation. The options are Enabled and **Disabled**. **Please refer to Intel's web site for detailed information.**

▶I/O Device Configuration

Access the submenu to make changes to the following settings.

KBC Clock Input

This setting allows you to select clock frequency for KBC. The options are 6MHz, 8MHz, **12MHz,** and 16MHz.

Serial Port A

This setting allows you to assign control of serial port A. The options are **Enabled** (user defined), Disabled, and Auto (BIOS- or OS- controlled).

Base I/O Address

This setting allows you to select the base I/O address for serial port A. The options are **3F8**, 2F8, 3E8, and 2E8.

Interrupt

This setting allows you to select the IRQ (interrupt request) for serial port A. The options are IRQ3 and **IRQ4**.

Serial Port B

This setting allows you to assign control of serial port B. The options are **Enabled** (user defined), Disabled, Auto (BIOS controlled) and OS Controlled.

Mode

This setting allows you to set the type of device that will be connected to serial port B. The options are **Normal** and IR (for an infrared device).

Base I/O Address

This setting allows you to select the base I/O address for serial port B. The options are 3F8, **2F8**, 3E8 and 2E8.

Interrupt

This setting allows you to select the IRQ (interrupt request) for serial port B. The options are **IRQ3** and IRQ4.

Parallel Port

This setting allows you to assign control of the parallel port. The options are **Enabled** (user defined), Disabled and Auto (BIOS-or OS- controlled).

Base I/O Address

Select the base I/O address for the parallel port. The options are **378**, 278 and 3BC.

Interrupt

This setting allows you to select the IRQ (interrupt request) for the parallel port. The options are IRQ5 and **IRQ7**.

Mode

This feature allows you to specify the parallel port mode. The options are Output only, Bi-Directional, EPP and **ECP**.

DMA Channel

This item allows you to specify the DMA channel for the parallel port. The options are DMA1 and **DMA3**.

Floppy Disk Controller

This setting allows you to assign control of the floppy disk controller. The options are **Enabled** (user defined), Disabled, and Auto (BIOS and OS controlled).

Base I/O Address

This setting allows you to select the base I/O address for the Floppy port. The options are **Primary** and Secondary.

▶DMI Event Logging

Access the submenu to make changes to the following settings.

Event Log Validity

This is a display to inform you of the event log validity. It is not a setting.

Event Log Capacity

This is a display to inform you of the event log capacity. It is not a setting.

View DMI Event Log

Highlight this item and press <Enter> to view the contents of the event log.

Event Logging

This setting allows you to **Enable** or Disable event logging.

ECC Event Logging

This setting allows you to **Enable** or Disable ECC event logging.

Mark DMI Events as Read

Highlight this item and press <Enter> to mark the DMI events as read.

Clear All DMI Event Logs

Select Yes and press <Enter> to clear all DMI event logs. The options are Yes and **No**.

▶Console Redirection

Access the submenu to make changes to the following settings.

COM Port Address

This item allows you to specify which COM port to direct the remote console to: Onboard COM A or Onboard COM B. This setting can also be **Disabled**.

BAUD Rate

This item allows you to set the BAUD rate for the console redirection. The options are 300, 1200, 2400, 9600, **19.2K**, 38.4K, 57.6K, and 115.2K.

Console Type

This item allows you to choose the console redirection type. The options are VT100, VT100,8bit, PC-ANSI, 7bit, **PC ANSI**, VT100+, and VT-UTF8.

Flow Control

This item allows you to set the flow control for the console redirection. The options are: None, XON/XOFF, and **CTS/RTS**.

Console Connection

This item allows you to decide how the console redirection is to be connected: either **Direct** or Via Modem.

Continue CR after POST

This item allows you to decide whether you want to continue with the console redirection after POST routines. The options are On and **Off**.

▶Hardware Monitor Logic

Highlight an item and hit <Enter> to see the status of each of the following items:

CPU Overheat Alarm

This option allows the user to select the CPU Overheat Alarm setting which determines when the CPU OH alarm will be activated to provide warning of possible CPU overheat. Refer to the next item, CPU Temperature for more information regarding PECI, DTS and other thermal features of this motherboard.

Warning: Any temperature that exceeds the CPU threshold temperature predefined by the CPU manufacturer may result in CPU overheat or system instability. When the CPU temperature reaches this predefined threshold, the CPU and system cooling fans will run at full speed.

The options are:

The Default Alarm Setting: Select this setting if you want the CPU overheat alarm (including the LED and the buzzer) to be triggered when the CPU temperature reaches about +5 PECI counts above the threshold temperature as predefined by the CPU manufacturer to give the CPU and system fans additional time needed for CPU and system cooling.

The Early Alarm Setting: Select this setting if you want the CPU overheat alarm (including the LED and the buzzer) to be triggered as soon as the CPU temperature reaches the CPU overheat threshold as predefined by the CPU manufacturer.

CPU1 Temperature/CPU2 Temperature

The CPU Temperature feature will display the CPU temperature status as detected by the BIOS:

Low – This level is considered as the 'normal' operating state. The CPU temperature is well below the CPU 'Temperature Tolerance'. The motherboard fans and CPU will run normally as configured in the BIOS (Fan Speed Control).

User intervention: No action required.

Medium – The processor is running warmer. This is a 'precautionary' level and generally means that there may be factors contributing to this condition, but the CPU is still within its normal operating state and below the CPU 'Temperature Tolerance'. The motherboard fans and CPU will run normally as configured in the BIOS. The fans may adjust to a faster speed depending on the Fan Speed Control settings.

User intervention: No action is required. However, consider checking the CPU fans and the chassis ventilation for blockage.

High – The processor is running hot. This is a 'caution' level since the CPU's 'Temperature Tolerance' has been reached (or has been exceeded) and may activate an overheat alarm:

The Default Alarm – the Overheat LED and system buzzer will activate if the High condition continues for some time after it is reached. The CPU fan will run at full speed to bring the CPU temperature down. If the CPU temperature still increases even with the CPU fan running at full speed, the system buzzer will activate and the Overheat LED will turn on.

The Early Alarm – the Overheat LED and system buzzer will be activated exactly when the High level is reached. The CPU fan will run at full speed to bring the CPU temperature down.

Note: In both the alarms above, please take immediate action as shown below. See CPU Overheat Alarm to modify the above alarm settings.

User intervention: If the system buzzer and Overheat LED has activated, take action immediately by checking the system fans, chassis ventilation and room temperature to correct any problems. Note: the system may shut down if it continues for a long period to prevent damage to the CPU.

Notes: The CPU thermal technology that reports absolute temperatures (Celsius/Fahrenheit) has been upgraded to a more advanced feature by Intel in its newer processors. The basic concept is each CPU is embedded by unique temperature information that the motherboard can read. This 'Temperature Threshold' or 'Temperature Tolerance' has been assigned at the factory and is the baseline on which the motherboard takes action during different CPU temperature conditions (i.e., by increasing CPU Fan speed, triggering the Overheat Alarm, etc). Since CPUs can have different 'Temperature Tolerances', the installed CPU can now send information to the motherboard what its 'Temperature Tolerance' is, and not the other way around. This results in better CPU thermal management.

Supermicro has leveraged this feature by assigning a temperature status to certain thermal conditions in the processor (Low, Medium and High). This makes it easier for the user to understand the CPU's temperature status, rather than by just simply seeing a temperature reading (i.e., 25^{o}C).

The information provided above is for your reference only. For more information on thermal management, please refer to Intel's Web site at www.Intel.com.

Temperature Monitoring (Available if supported by the CPU)

This function monitors the following PECI (Platform Environment Control Interface) items:

CPU1 Temperature/CPU1 Second Core/CPU2 Temperature/CPU2 Second Core/PECI Agent 1/PECI Agent 2/PECI Agent 3 /PECI Agent 4 Temperature/ System Temperature

Fan1-Fan6 Speeds: If the feature of Auto Fan Control is enabled, the BIOS will automatically display the status of the fans indicated in this item.

Fan Speed Control Modes

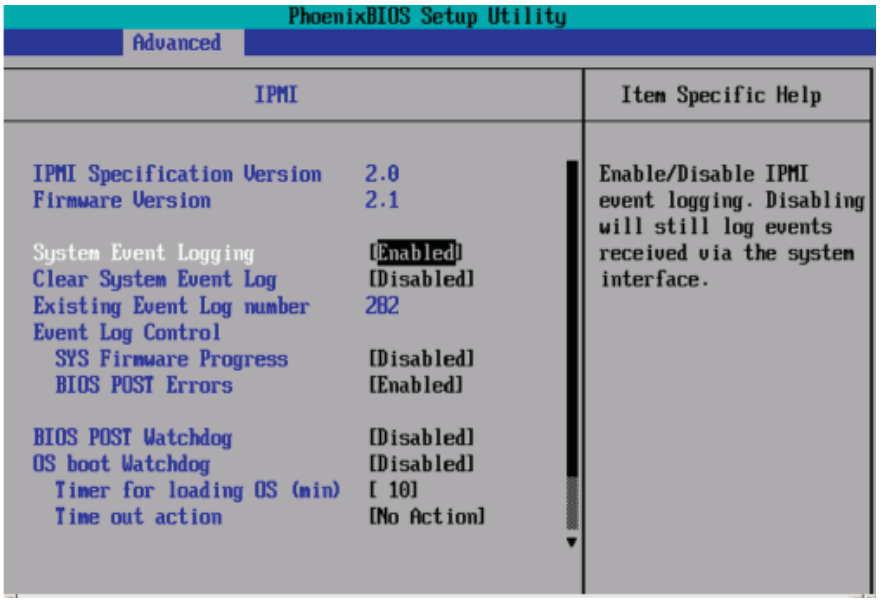
This feature allows the user to decide how the system controls the speeds of the onboard fans. The CPU temperature and the fan speed are correlative. When the CPU on-die temperature increases, the fan speed will also increase, and vice versa. If the option is set to 3-pin fan, the fan speed is controlled by voltage. If the option is set to 4-pin, the fan speed will be controlled by Pulse Width Modulation (PWM). Select 3-pin if your chassis came with 3-pin fan headers. Select 4-pin if your chassis came with 4-pin fan headers. Select Workstation if your system is used as a Workstation. Select Server if your system is used as a Server. Select Disable to disable the fan speed control function to allow the onboard fans to run at full speed (12V) at all times. The Options are: **1. Disable**, 2. 3-pin (Server), 3. 3-pin (Workstation), 4. 4-pin (Server) and 5. 4-pin (Workstation).

Voltage Monitoring

The following items will be monitored and displayed:
Vcore A:/Vcore B:/-12V/+12V/P1V5/+3.3V/5Vsb/5VDD/P_VTT/Vbat

Note: In the Windows OS environment, the Supero Doctor III settings take precedence over the BIOS settings. When first installed, Supero Doctor III adopts the temperature threshold settings previously set in the BIOS. Any subsequent changes to these thresholds must be made within Supero Doctor, since the SD III settings override the BIOS settings. For the Windows OS to adopt the BIOS temperature threshold settings, please change the SDIII settings to be the same as those set in the BIOS.

▶IPMI (The option is available only when an IPMI card is installed in the system.)


PhoenixBIOS Setup Utility
Advanced
IPMI
Item Specific Help
IPMI Specification Version 2.0
Firmware Version 2.1
System Event Logging [Enabled]
Clear System Event Log [Disabled]
Existing Event Log number 282
Event Log Control
SYS Firmware Progress [Disabled]
BIOS POST Errors [Enabled]
BIOS POST Watchdog [Disabled]
OS boot Watchdog [Disabled]
Timer for loading OS (min) [10]
Time out action [No Action]
Enable/Disable IPMI event logging. Disabling will still log events received via the system interface.

IPMI Specification Version: This item displays the current IPMI Version.

Firmware Version: This item displays the current Firmware Version.

System Event Logging

Select Enabled to enable IPMI Event Logging. When this function is set to Disabled, the system will continue to log events received via system interface. The options are **Enabled** and Disabled.

Clear System Event Logging

Enabling this function to force the BIOS to clear the system event logs during the next cold boot. The options are Enabled and **Disabled**.

Existing Event Log Number

This item displays the number of the existing event log.

Event Log Control

System Firmware Progress

Enabling this function to log POST progress. The options are Enabled and **Disabled**.

BIOS POST Errors

Enabling this function to log POST errors. The options are Enabled and **Disabled**.

BIOS POST Watch Dog

Set to Enabled to enable POST Watch Dog. The options are Enabled and **Disabled**.

OS Boot Watch Dog

Set to Enabled to enable OS Boot Watch Dog. The options are Enabled and **Disabled**.

Timer for Loading OS (Minutes)

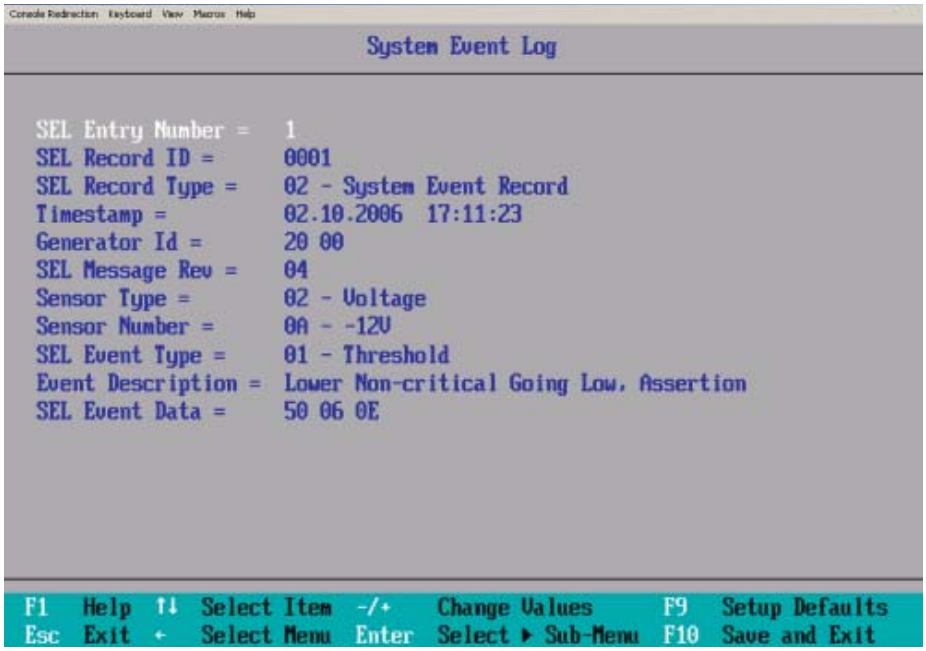
This feature allows the user to set the time value (in minutes) for the previous item: OS Boot Watch Dog by keying-in a desired number in the blank. The default setting is 10 (minutes.) (Please ignore this option when OS Boot Watch Dog is set to "Disabled".)

Time Out Option

This feature allows the user to determine what action to take in an event of a system boot failure. The options are **No Action**, Reset, Power Off and Power Cycles.

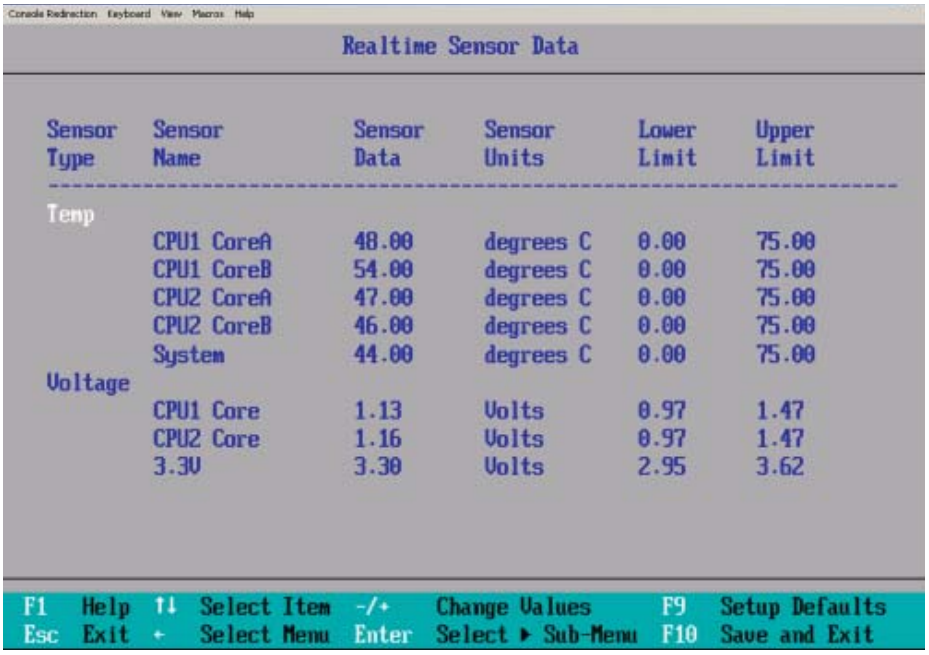
▶System Event Log/System Event Log (List Mode)

These options display the System Event (SEL) Log and System Event (SEL) Log in List Mode. Items include: SEL (System Event Log) Entry Number, SEL Record ID, SEL Record Type, Time Stamp, Generator ID, SEL Message Revision, Sensor Type, Sensor Number, SEL Event Type, Event Description, and SEL Event Data.


System Event Log
SEL Entry Number = 1
SEL Record ID = 0001
SEL Record Type = 02 - System Event Record
Timestamp = 02.10.2006 17:11:23
Generator Id = 20 00
SEL Message Rev = 04
Sensor Type = 02 - Voltage
Sensor Number = 0A - -12V
SEL Event Type = 01 - Threshold
Event Description = Lower Non-critical Going Low, Assertion
SEL Event Data = 50 06 0E
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ← Select Menu Enter Select ▸ Sub-Menu F10 Save and Exit

▶Realtime Sensor Data

This feature display information from motherboard sensors, such as temperatures, fan speeds and voltages of various components.


Console Redirection Keyboard View Macros Help
Realtime Sensor Data
Sensor Type
Sensor Name
Sensor Data
Sensor Units
Lower Limit
Upper Limit
Temp
CPU1 CoreA 48.00 degrees C 0.00 75.00
CPU1 CoreB 54.00 degrees C 0.00 75.00
CPU2 CoreA 47.00 degrees C 0.00 75.00
CPU2 CoreB 46.00 degrees C 0.00 75.00
System 44.00 degrees C 0.00 75.00
Voltage
CPU1 Core 1.13 Volts 0.97 1.47
CPU2 Core 1.16 Volts 0.97 1.47
3.3V 3.30 Volts 2.95 3.62
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ← Select Menu Enter Select ▸ Sub-Menu F10 Save and Exit

▶IPMI LAN Configuration

The following features allow the user to configure and monitor IPMI LAN settings.

VLAN Tagging

Select Enabled to enable Virtual LAN(s) for IPMI connections and allow the user to configure VLAN settings. The options are Enabled and **Disabled**.

VLAN ID

If VLAN Tagging above is set to Enabled, this item allows the user to change the VLAN ID. If VLAN Tagging is disabled, this item will be ignored by the firmware.

IP Address Source

This item allows the user to select the IP address source for the connection. The options are **DHCP** and Static. If Static is selected, the following items need to be set manually. Selecting DHCP will allow the network's DHCP server (if your network has one) to assign values to these items automatically:

IP Address

This item displays the IP address for the IPMI connection detected.

IP Subnet Mask

This item displays the IP Subnet Mask for the IPMI connection detected.

Default Gateway

This item displays the Default Gateway for the IPMI connection detected.

MAC Address

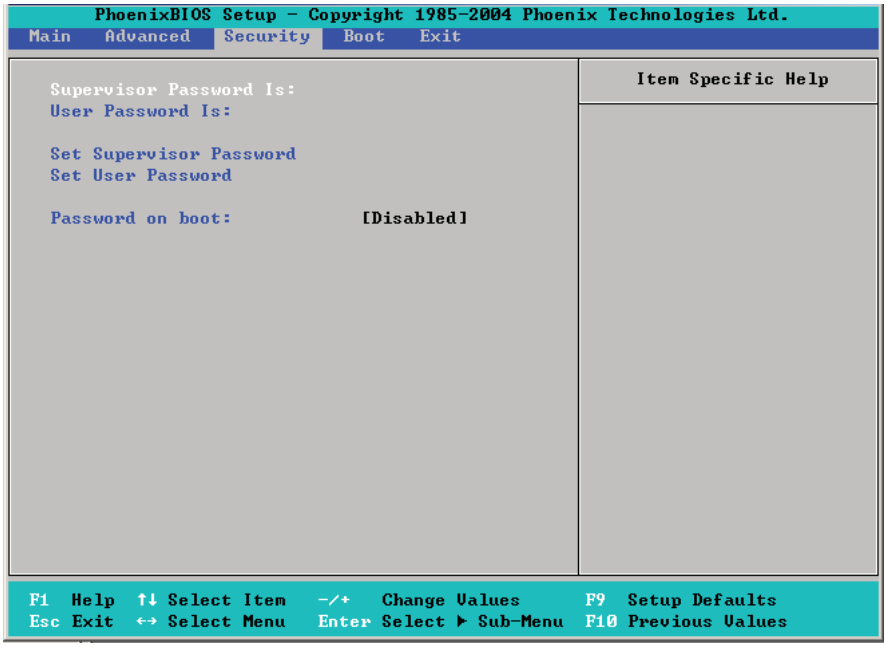
This is the system's hardware address. This do not need to be set or changed in most cases.

Update LAN Settings

Select Yes to allow BIOS update LAN setting. The options are Yes and **No**.

4-5 Security

Choose Security from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. Security setting options are displayed by highlighting the setting using the arrow keys and pressing <Enter>. All Security BIOS settings are described in this section.


PhoenixBIOS Setup - Copyright 1985-2004 Phoenix Technologies Ltd.
Main Advanced Security Boot Exit
Supervisor Password Is:
User Password Is:
Set Supervisor Password
Set User Password
Password on boot: [Disabled]
Item Specific Help
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ↔ Select Menu Enter Select ▶ Sub-Menu F10 Previous Values

Supervisor Password Is:

This indicates if a supervisor password has been entered for the system. Clear means such a password has not been used and Set means a supervisor password has been entered for the system.

User Password Is:

This indicates if a user password has been entered for the system. Clear means such a password has not been used and Set means a user password has been entered for the system.

Set Supervisor Password

When the item Set Supervisor Password is highlighted, hit the <Enter> key. When prompted, type the Supervisor's password in the dialogue box to set or to change supervisor's password, which allows access to the BIOS.

Set User Password

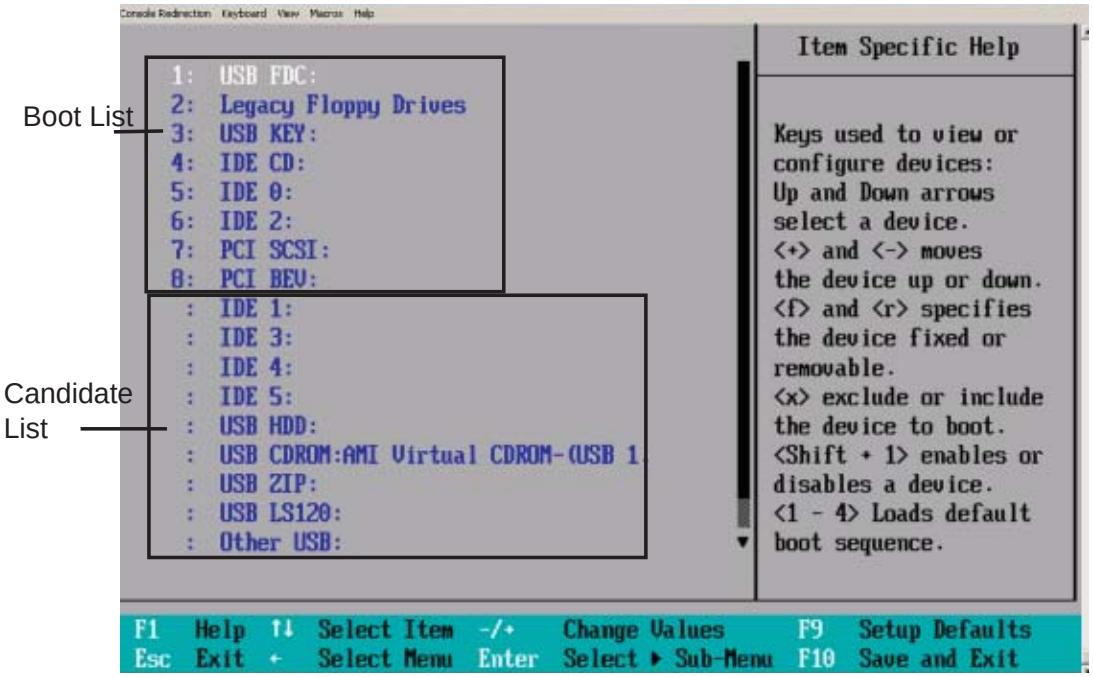
When the item Set User Password is highlighted, hit the <Enter> key. When prompted, type the user's password in the dialogue box to set or to change the user's password, which allows access to the system at boot-up.

Password on Boot

This setting allows you to determine if a password is required for a user to enter the system at bootup. The options are Enabled (password required) and **Disabled** (password not required).

4-6 Boot

Choose Boot from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. See details on how to change the order and specs of boot devices in the Item Specific Help window. All Boot BIOS settings are described in this section.

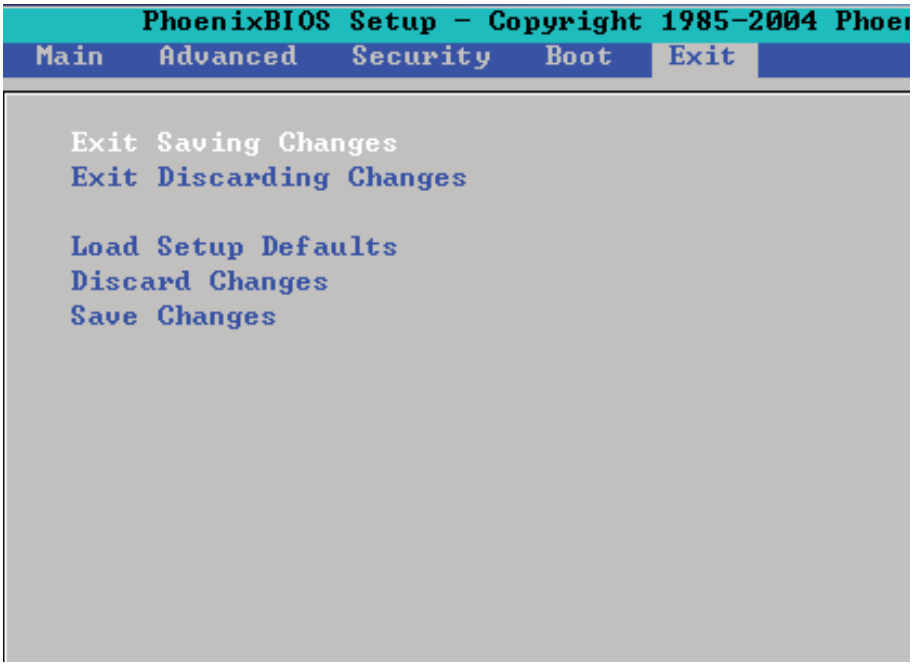

Boot List
Candidate List
1: USB FDC:
2: Legacy Floppy Drives
3: USB KEY:
4: IDE CD:
5: IDE 0:
6: IDE 2:
7: PCI SCSI:
8: PCI BEV:
: IDE 1:
: IDE 3:
: IDE 4:
: IDE 5:
: USB HDD:
: USB CDROM:AMI Virtual CDROM-(USB 1
: USB ZIP:
: USB LS120:
: Other USB:
Item Specific Help
Keys used to view or configure devices:
Up and Down arrows select a device.
<+> and <-> moves the device up or down.
<f> and <r> specifies the device fixed or removable.
<x> exclude or include the device to boot.
<Shift + 1> enables or disables a device.
<1 - 4> Loads default boot sequence.
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ← Select Menu Enter Select ▸ Sub-Menu F10 Save and Exit

Boot Priority Order/Excluded from Boot Orders

The devices included in the boot list section (above) are bootable devices listed in the sequence of boot order as specified. The boot functions for the devices included in the candidate list (above) are currently disabled. Use a <+> key or a <-> key to move the device up or down. Use the <f> key or the <r> key to specify the type of an USB device, either fixed or removable. You can select one item from the boot list and hit the <x> key to remove it from the list of bootable devices (to make its resource available for other bootable devices). Subsequently, you can select an item from the candidate list and hit the <x> key to remove it from the candidate list and put it in the boot list. This item will then become a bootable device. See details on how to change the priority of boot order of devices in the "Item Specific Help" window.

4-7 Exit

Choose Exit from the Phoenix BIOS Setup Utility main menu with the arrow keys. You should see the following display. All Exit BIOS settings are described in this section.



Exit Saving Changes

Highlight this item and hit <Enter> to save any changes you made and to exit the BIOS Setup utility.

Exit Discarding Changes

Highlight this item and hit <Enter> to exit the BIOS Setup utility without saving any changes you may have made.

Load Setup Defaults

Highlight this item and hit <Enter> to load the default settings for all items in the BIOS Setup. These are the safest settings to use.

Discard Changes

Highlight this item and hit <Enter> to discard (cancel) any changes you made. You will remain in the Setup utility.

Save Changes

Highlight this item and hit <Enter> to save any changes you made. You will remain in the Setup utility.

Notes

Appendix A

POST Error Beep Codes

This section lists POST (Power On Self Test) error beep codes for the Phoenix BIOS. POST error beep codes are divided into two categories: recoverable and terminal. This section lists Beep Codes for recoverable POST errors.

Recoverable POST Error Beep Codes

When a recoverable type of error occurs during POST, BIOS will display a POST code that describes the problem. BIOS may also issue one of the following beep codes:

1 long and two short beeps - video configuration error

1 repetitive long beep - no memory detected

1 continuous beep (with OH LED on) - system overheat

Notes

Appendix B

Installing the Windows OS

After all hardware components have been installed, you must first configure Intel South Bridge RAID Settings before you install the Windows OS and other software drivers. To configure RAID settings, please refer to RAID Configuration User Guides posted on our web site at www.supermicro.com/support/manuals.

B-1 Installing the Windows XP/2000/2003 OS for Systems with RAID Functions

1. Insert Microsoft's Windows XP/2000/2003 Setup CD in the CD Driver, and the system will start booting up from CD.

2. Press the <F6> key when the message-" Press F6 if you need to install a third party SCSI or RAID driver" displays.

3. When the Windows XP/2000/2003 Setup screen appears, press "S" to specify additional device(s).

4. Insert the driver diskette-"Intel AA RAID XP/2000/2003 Driver for ESB2" into Drive A: and press the <Enter> key.

5. Choose the Intel(R) ESB2 *SATA RAID Controller* from the list indicated in the XP/2000/2003 Setup Screen, and press the <Enter> key.

6. Press the <Enter> key to continue the installation process. (If you need to specify any additional devices to be installed, do it at this time.) Once all devices are specified, press the <Enter> key to continue with the installation.

7. From the Windows XP/2000/2003 Setup screen, press the <Enter> key. The XP/2000/2003 Setup will automatically load all device files and then, continue the Windows XP/2000/2003 installation.

8. After the Windows XP/2000/2003 OS Installation is completed, the system will automatically reboot.

B-2 Installing the Windows XP/2000/2003 OS for Systems without RAID Functions

1. Insert Microsoft's Windows XP/2000/2003 Setup CD in the CD Driver, and the system will start booting up from CD.

2. Follow the instructions given on the screen to continue with OS installation.

3. After the Windows XP/2000/2003 OS Installation is completed, the system will automatically reboot.

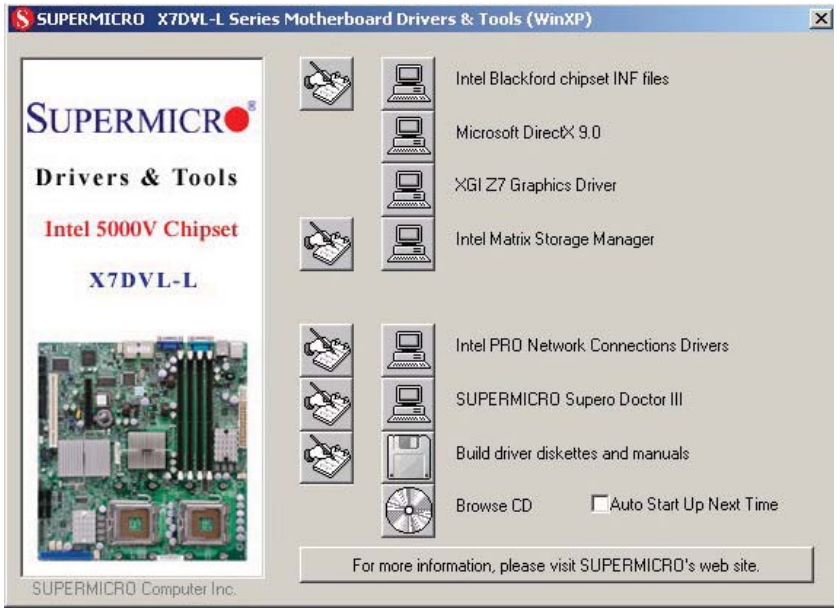
4. Insert the Supermicro Setup CD that came with your motherboard into the CD Drive during system boot, and the main screen will display.

Appendix C

Installing Other Software Programs and Drivers

C-1 Installing Drivers other than the Adaptec Embedded Serial ATA RAID Controller Driver

After you've installed the Windows Operating System, a screen as shown below will appear. You are ready to install software programs and drivers that have not yet been installed. To install these software programs and drivers, click the icons to the right of these items.


SUPERMICRO X7DVL-L Series Motherboard Drivers & Tools (WinXP)
SUPERMICRO
Drivers & Tools
Intel 5000V Chipset
X7DVL-L
SUPERMICRO Computer Inc.
Intel Blackford chipset INF files
Microsoft DirectX 9.0
XGI Z7 Graphics Driver
Intel Matrix Storage Manager
Intel PRO Network Connections Drivers
SUPERMICRO Supero Doctor III
Build driver diskettes and manuals
Browse CD
Auto Start Up Next Time
For more information, please visit SUPERMICRO's web site.

Driver/Tool Installation Display Screen

Note: Click the icons showing a hand writing on the paper to view the readme files for each item. Click a computer icon to the right of an item to install an item (from top to the bottom) one at a time. **After installing each item, you must re-boot the system before proceeding with the next item on the list.** The bottom icon with a CD on it allows you to view the entire contents of the CD.

C-2 Configuring Supero Doctor III

The Supero Doctor III program is a Web-based management tool that supports remote management capability. It includes Remote and Local Management tools. The local management is called the SD III Client. The Supero Doctor III program included in the CDROM that came with your motherboard allows you to monitor the environment and operations of your system. Supero Doctor III displays crucial system information such as CPU temperature, system voltages and fan status. See the Figure below for a display of the Supero Doctor III interface.

Note 1: Both default user name and password are **ADMIN**.

Note 2: In the Windows OS environment, the Supero Doctor III settings take precedence over the BIOS settings. When first installed, Supero Doctor III adopts the temperature threshold settings previously set in the BIOS. Any subsequent changes to these thresholds must be made within Supero Doctor, since the SD III settings override the BIOS settings. For the Windows OS to adopt the BIOS temperature threshold settings, please change the SDIII settings to be the same as those set in the BIOS.

Supero Doctor III Interface Display Screen-I (Health Information)

Supero Doctor III Interface Display Screen-II (Remote Control)

Super Doctor III
Remote Management
SUPERMICRO
ADMIN
System Info. | Health Info. | Performance | Remote Control | Configuration | Administration | Systems Management | Report | Help
Remote Control
Graceful Power Control
Open Console
Power Control
Enter
Comm.
Graceful power control
Supero Doctor III allows a user to inform the OS to reboot or shut down within a specified time (the default is 30 seconds). Before the system reboots or shuts down, it's allowed to cancel the action.
Requirements
Keep Supero SD3Service Daemon running at all times on this system.
Provide TCP/IP connectivity.
Power control

(**Note**: The SD III Software can be downloaded from our Web site at: ftp://ftp.supermicro.com/utility/Supero_Doctor_III/. You can also download SDIII User's Guide at: http://www.supermicro.com/PRODUCT/Manuals/SDIII/UserGuide.pdf. For Linux, we will still recommend that you use Supero Doctor II.)

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